Northern Nigeria

Dept

ANNUAL MEDICAL REPORT FOR THE YEAR ENDING 31ST DECEMBER, 1910.

Table I. gives a complete list of the Medical and Nursing Staff. Administrative Staff

During the year Dr. Blair, Senior Medical Officer, was promoted Senior Sanitary Officer and Dr. Foy, Medical Officer, Junior Sanitary Officer.

Dr. Graham, Senior Medical Officer, arrived from Southern Nigeria, on promotion.

Dr. C. E. S. Watson, Medical Officer, was promoted Senior Medical Officer.

Attached is a Statement of Expenditure incurred by the Medical Department, Table II. Financial.

	£	s.	d.
The Revenue derived from Hospital Fees during the year was	659	3	3
And from the sale of Medical Comforts ...	104	16	4
Making a total of	763	19	7

General Remarks.

The general health of both Europeans and Natives in the Protectorate during the year may be considered as satisfactory when compared with past years, as the appended Tables of Analysis go to show. Health.

	1903	1904	1905	1906	1907	1908	1909	1910
Average European Population	309	322	342	347	424	499	544	637
Number of deaths ...	18	13	10	17	7	10	13	13
Death rate per 1,000 ...	58·25	40·37	29.23	48·99	16·50	20·04	23·89	20·41
Number of Invalids ...	43	67	49	55	50	48	67	48
Invaliding rate per 1,000	139·15	208·15	143 27	158·5	117·92	96·19	123·16	75·35

The general character of the diseases prevailing showed little change.

The Nosological Table gives a complete list of cases treated amongst Europeans and Natives. The total of the former being 1,039 and the latter 23,770.

During the year 3,899 Paupers were treated at the expense of the Government.

Appended is a list of cases of Blackwater Fever showing comparison with previous years:—

	1903	1904	1905	1906	1907	1908	1909	1910
Number of cases ...	17	35	18	25	12	14	13	9
Rate per 1,000 of average population	54·69	108·69	52·63	72·04	28·32	28·05	23·89	14·12
Number of deaths ...	8	6	4	5	0	4	3	2
Case of mortality per cent	47·05	17·14	22·2	20	—	28·57	23·07	22·2

There were 3,942 successful vaccinations performed.

TABLE SHOWING THE SICK, INVALIDING, AND DEATH RATES OF EUROPEAN OFFICIALS.

	Official.	Non-Official.	Total.
Total number of officials resident	...	...	...
Average number resident	424	213	637
Total number on sick list	...	...	1,039
Total number of days on sick list	...	...	...
Average daily number on sick list	...	...	...
Percentage of sick to average number resident	...	...	163·1
Average number of days on sick list for each Patient ...	...	...	...
Average sick time to each resident	...	...	...
Total number invalided	31	17	48
Percentage of invalidings to total residents	7·3	7·9	7·5
Total deaths	7	6	13
Percentage of deaths to total residents	...	...	...
,, ,, ,, average number resident	1·65	2·81	2·04
Number of cases of sickness contracted away from residence ...	...	...	...

Sanitation.

I forward herewith a most exhaustive and thorough report by the Senior Sanitary Officer, which deals with every point under the above heading.

Meteorology.

Detailed monthly reports are submitted from (18) eighteen stations.

They are accepted as reliable by the Meteorological Society.

The Medical Officer of each station is responsible for the record.

Highest shade temperature—114° F. at Geidam March 23rd, and at Maiduguri on March 26th.

Lowest shade temperature—39° F. at Sokoto on January 4th.

Highest mean shade temperature—84·2° F. at Baro.

Lowest mean shade temperature—76·3 F. at Ankpa.

Greatest rainfall (annual total) 56·44″ at Ankpa.

Greatest fall on one day—5·53″ on 6th August at Zungeru.

Lowest rainfall (annual total) 16·87″ at Geidam (no record for May.)

Greatest range of temperature—73° F. at Maiduguri 114°—41.°

There is an European Hospital at each of the following stations :—

Lokoja	12 beds.
Baro Temporary for Baro-Kano Railway Construction.	
Zungeru	12 beds.

Native Hospital.

Lokoja	52 beds.
Baro. Temporary for Baro-Kano Railway Construction.	
Zungeru	48.

At every other station a Hospital for Natives is erected if necessary.

In the outstations Europeans are treated in quarters.

The diseases will be found in the Nosological Table.

I attach some notes on Leprosy in the Province of Sokoto.

TABLE I.

MEDICAL STAFF.

Appointment.	Name.
Principal Med. Officer	S. W. Thompstone, C.M.G.
Deputy ,, ,, ,,	J. P. Fagan
Senior Sanitary Officer	M. C. Blair
Senior Medical Officer	E. A. Chartres
,, ,, ,,	F. Manning
,, ,, ,,	C. E. S. Watson
,, ,, ,,	E. W. Graham
Sanitary Officer	H. A. Foy
Medical Officer	H. C. Lewer
,, ,,	F. W. Chesnaye
,, ,,	H. P. Lobb
,, ,,	C. F. Watson
,, ,,	W. H. A. Gordon-Hall
,, ,,	E. C. Adams
,, ,,	B. Flood
,, ,,	M. W. Manuk
,, ,,	A. Bremner
,, ,,	D. Alexander
,, ,,	G. R. Twomey
,, ,,	A. C. Parsons
,, ,,	M. F. Ellis
,, ,,	C. T. Costello
,, ,,	K. McGahey
,, ,,	H. G. McKinney
,, ,,	G. B. Norman
,, ,,	J. M. Dalziel
,, ,,	R. F. Williams
,, ,,	W. D. Inness
,, ,,	A. J. T. Swann
,, ,,	B. Moiser
,, ,,	G. J. Pirie
,, ,,	C. W. McLeay
,, ,,	J. M. W. Pollard
,, ,,	W. A. Trumper
,, ,,	Captain F. E. Bissell
,, ,,	F. W. McCay
,, ,,	E. J. Porteous
,, ,,	H. W. Gush
,, ,,	J. Lindsay
,, ,,	J. W. S. Macfie
,, ,,	W. Morrison
,, ,,	P. C. Conran
Chief Dispenser & Storekeeper	G. C. W. King
Male Nurse	J. W. Vincent
One Staff Sergeant, Nine Sergeants	Persons employed.
Ten Nursing Sisters	Miss M. A. Ward & ,, J. A. Clark &c.
2 2nd Class Dispensers	C. E. Roberts & one other
1 3rd ,, ,,	Person employed
2 ,, Grade Clerks	C. I. Davies & J. F. Eshon
12 Dressers	
2 Cooks	
7 Wardservants, 2 Messengers, 17 Dispensary Attendants	Persons employed

TABLE II.

Statement of Expenditure.

MEDICAL DEPARTMENT.

1 Principal Medical Officer at £1,000 to £1,200 by £50	£1,200
Duty pay at £200 ...	200
1 Deputy P.M.O. at £800 to £900 by £25 ...	800
Duty Pay at £160 ...	93
1 Senior Sanitary Officer at £800 to 900 by £50	800
Duty Pay at £160	160
1 Sanitary Officer of £600 to £700 by £25 ...	300
Duty pay at £120 ...	60
4 Senior Medical Officers at £600 to £700 by £25	2,657
Duty pay for 2 at £120 ...	320
14 Medical Officers at £400 to £500 by £20 ...	6,411
20 Medical Officers at £500 to £600 by £25 ...	10,465
Active Service Allowance to M.Os. on expeditions at 10/- per diem ...	60
Sanitary Allowance to 3 Medical Officers at £50	150
1 Chief Dispenser and Storekeeper at £300 to £350 by £10	300
1 Staff Sergeant at £162. Staff pay at £24 ...	186
1 Male Nurse at £180 to £250 by £10 ...	250
9 Sergeants : 2 at £150; 1 at £152; 3 at £150; 1 at £149; 2 at £144 ...	1,357
Staff pay to 2 Sergeants at £24	48
10 Nursing Sisters at £100 to £150 by £10 ...	1,139
Duty pay of 2 Nurses in charge at £20	40
Field and Ration Allowances	1,610
2 Second Class Dispensers at £100 to £150 by £10	227
1 Third Class Dispenser at £80 to £100 by £5	84
2 Third Grade Clerks at £88 to £116 by £4	223
12 Dressers at £24 to £36 by £3	376
2 Cooks at £42	84
7 Ward Servants at £18	126
2 Messengers at £12	24
2 Headmen of Ambulance at 1/- per diem ...	36
24 Ambulance Bearers at 10d. per diem ...	365
17 Dispensary attendants for out-stations at £1 per month	204
Total ...	£30,355

Other Charges.

Drugs, Instruments and Appliances ...	£1,000
Hospital and Camp Equipment	300
Medical Comforts	200
Hospital Diet and Provisions	500
Light Fuel &c.	60
Horse Allowance 28 at 2/6	1,277
,, ,, 7 at 1/9	234
Outfits for Subordinates R. A. M. C. 6 at £14	94
,, Nursing Sisters $6\frac{2}{3}$ at £12 ...	80
,, Medical Officers 1 at £12 ...	12
Contribution to Southern Nigeria for Medical Officer at Burutu	60
Medical examination of Officers in England ...	150
Expenses N. C. Os. and Nurses travelling in England	25
Scientific Instruments and Appliances ...	50
Expenses of Medical Officers and Nurses in Tropical School and fees on engagement of Nurses ...	60
Expenses in connection with Isolation Hospitals	20
Vaccination Expenses	200
Expenses in connection with Research work	20
Special remuneration to Missionary and Ships Doctors	50
Medical Research Institute	195
Total ...	£4,587

Summary.

Personal Emoluments	30,355
Other Charges	4,587
Total ...	£34,942

TABLE III.

RETURN OF STATISTICS OF POPULATION FOR THE YEAR.

	Europeans and Whites.	Africans.	East Indians.	Chinese and Malays.	Mixed and Coloured.
Number of inhabitants in 1909	544	...	...	...	...
Number of Births during the year 1910 ...	...	...	...	...	...
Number of deaths during the year 1910 ...	13	...	...	...	...
Number of Imigrants during the year 1910 ...	...	...	...	...	...
Number of Emigrants during the year 1910 ...	...	...	...	...	...
Number of inhabitants in 1910	637	...	...	...	...
Increase	93	...	...	...	...
Decrease	...	...	...	...	...

J. P. FAGAN,
Acting Principal Medical Officer.

Zungeru,
5th May, 1911.

SANITATION.

(A.) General Review of Work done, Laws passed, and Progress made.

(1) Administration.

During the year, in the course of touring, I personally visited a considerable part of the Protectorate. It had, originally, been my aim to visit every station in the country; but delay in being relieved, after my appointment to my present office, and special calls to spots where my services were required rendered this a physical impossibility. Hereafter, the arrival in Kano of the Baro-Kano Railway will render it possible for my colleague and myself to realise this aim annually.

In April, I inspected the whole length of the Railway from Baro to a point 27 miles beyond Zaria: partly running line and partly the distal earth-works with the type-camps.

During July, my travelling began at Zungeru, was continued via Minna along the course of the Railway to Zaria and back to Zungeru on the 6th of August.

In the course of this tour, I arranged in association with the Resident of the District there, the laying out of a new town at Minna for the rapidly growing native population.

I then laid down certain principles to be abound in the laying out of new native towns. They were as follows:—

"All new native towns here should be square or "rectangular. The greatest length ought to lie East "and West: to enable the streets to be bathed in a 'maximum of sunlight, and to be swept by the 'prevailing winds. A broad 100 ft. street ought to "run the whole length of the town: and it ought to "be crossed by another similar thoroughfare. The "secondary streets ought to be, at least fifty feet wide: "and 20 ft. lanes ought to run between the backs "of adjacent rows."

"By following this plan, the town can be seen "through its whole length, or through its whole "breadth, by a person standing in any street or lane. "The plots ought, if possible, to be 90 ft. x 90 ft. "The town ought not to be sufficiently broad to "render a system of dry-earth conservancy difficult. "The market ought to be outside of the town: and if "possible, to leeward and down-hill from it; to "avoid carrying market rubbish through the town, "soakage from the market into the town, and the "carrying thither from the market of the inevitable "flies.

"Of course, if a town be built on a slope, the "streets must run up and down hill: the questions of "direction of wind and of sunlight giving place to "this consideration."

"As all the members of the Medical Staff know "from sad experience, there is not a single station in "the Protectorate in which anything like a satisfac-"tory sanitary system can be carried out otherwise "than with great difficulty: and for this reason, the "severest simplicity ought to be the guiding principle "in the inception of any new native town. Other "factors in the case are the religion, race, manners "and customs of the natives; but all these merely "emphasise the necessity for studying simplicity in "the planning of new towns."

His Excellency assented to these principles with some reservation; *e. g.*, accepting the above plan as the starting point, directed that extensions at right angles should be introduced, forming large open squares at intervals, that the lanes between the mutual backs of rows of compounds should be fifteen feet, and the unit of a compound should be 100 ft. deep x 50 ft. broad.

Of course such rectangular extensions as those recommended by His Excellency will only be applied to towns of considerable size situated on areas sufficiently flat and extensive.

The important point is that the principle has been laid down that. in future, all new towns in the Protectorate shall be laid out in straight lines with broad thoroughfares, that a straight lane shall separate the mutual backs of parallel rows of compounds, that no compound shall front a thoroughfare less than fifty feet broad, and that the regularity of the thoroughfares shall be maintained by the compounds being kept of an uniform depth.

On arrival at Zaria, I found His Excellency himself there: and he did me the honour of inviting my advice on the laying out of the station there, "from the point of view of sanitation."

Inter alia, I then laid down the following points, which should constantly be kept in view, in the laying out of new stations of mixed Europeans and natives as distinguished from purely native towns.

(*a.*) "To have the houses of Europeans on the "highest ground; in order that a maximum of "dryness and of moving air may be secured."

(*b.*) "To have the houses of Europeans, and the "offices in which they work, facing North and "South: in order that the sun may pass along the "roof-ridge and heat the walls as little as possible. "As the tornados with their driving rain come "roughly, from the East, this position also tends to "protect the body of the house from dampness "caused by them."

(*c.*) "To have the Europeans compounds as large "as is reasonably possible—100 yards square ought "to be the minimum so that the residence of the "necessary native servants within the compounds "may not result in too close an intermingling of "natives with Europeans in the European quarter."

(*d.*) "To have the boundary of no native quarter "within four hundred yards of the nearest European "dwelling house."

(*e.*) "To have provision made—in places so situated "that they are sufficiently near and still do not "result in nuisance-for the incineration and burying "of refuse, for the disposal of the contents of latrine "buckets, and for latrines for the use of the native "population."

(*f.*) "From the point of view of distance from "European habitation to have clerks, artizans, traders, "and other African non-natives treated precisely "in the same manner as the indigenous natives: for "in some respects, the sanitary habits of this class of "Africans are much worse than those of the natives."

(*g*) "In the native quarters, to have the streets "or rows in definite lines."

"The houses and compounds ought, in structure "and arrangement, to be in conformity with the "manners and customs of the people; but so "designed as to secure plenty of light, free ventila-'tion, efficient drainage, and suitable positions in "relation to the public roadway and to neigh-"bouring houses and compounds."

(*h*) "To have the native quarter, or quarters, "down-water from the European: and, if possible, "so situated that the wind does not blow from the "native to the European quarter."

(*i*) "To have adequate provision made for open "spaces, gardens, recreation grounds, public buildings, "and native bathing places."

(*j*) "To secure an abundant water-supply and "one as pure as possible—for Europeans and natives "alike."

(*k*) "To have a final plan made, and kept on "record: so that future extensions may be arranged "on a definite system."

His Excellency expressed his intention to embody the above-written points in the standing instructions for the laying out of new stations.

While at Zaria, also, I had,—in association with Mr. Resident Withers-Gill and Dr. Porteous, the Medical Officer—a consultation with the Emir touching the sanitation of the city of Zaria, and, incidentally, of the other towns in his emirate—for an African, the Emir, although an old man for a native, is wonderfully receptive of and responsive to new ideas. Incited thereto by the Resident, he has already attempted a considerable amount of street improvement and market clearing; but he himself is much in advance of his people. As an example of his mental alertness, I may here state that, within the last few years, he has learnt to write Hausa in the Roman character: *i.e.* after having used the Arabic alphabet until he was well past fifty years of age.

In all towns where the houses are built of mud, as they are at Zaria, and particularly in walled towns of which Zaria is one, one of the leading enemies to health is to be found in the numerous borrow-pits, which are ponds during the rains.

The chief points dealt with, during the interview with the Emir, were the dangers arising from flies and mosquitoes and the means of keeping those insects down, the necessity for utilising the mud from broken down walls and ruinous houses for the filling up of the borrow-pits, the obligation resting upon him to see that future mud for house building was brought from a distance and preferably from the banks of a stream, the necessity for protecting wells by parapets and keeping them mosquito-proof, and the cause of barrenness and of infantile mortality together with the means of fighting against them.

In such interviews it is always necessary to avoid saying too much: and it is my practice, therefore, always to stop, when the Resident thinks that I have said as much as the native concerned can absorb. It is most important to get the sympathies of the Emirs and their Sarakuna enlisted on the side of sanitation: for their power over their people is great; and, when God and the Koran are invoked in support of sanitary proclamations, as they generally are, the weight of an Emir's message to his people is considerably augmented.

At Zungeru, the capital of the Protectorate, great sanitary improvements have been effected during 1909 and 1910, many trees have been cut down, or have had their lower branches lopped; and scrub and grass have been cleared along the Dago—the stream which runs through the Cantonment—and in the body of the Cantonment itself. As a consequence of this, flies are much less numerous than they were formerly. The native town is being radically altered. A great broad thorough-fare has been cut from the market-place right on to Kworra Town, a native town two miles away; many African slums have been razed with the ground; the people are been granted larger sites along the new road and encouraged to extend longitudinally; and no native is allowed to live in the Cantonment without a permit from the Cantonment Magistrate—a regulation which tends to keep down thieves and prostitutes, the most insanitary classes in the community.

It was decided, during the year, to pull up the Zungeru—Barajuko Tramway. Six miles of the rails from Zungeru were ear-marked for sanitary purposes, and shortly, all the night-soil and non-combustible rubbish will be taken further of the Cantonment on trolleys and disposed of away altogether from human habitation.

2. On the 13th of August, I left Zungeru on another tour of inspection. The first place visited was Lokoja, at the confluence of the rivers Niger and Benue, where I remained three weeks. Thereafter I proceeded up the river Benue, as far as Yola, about 500 miles. All the stations on that river were visited. On returning from the Benue, a visit was made to Burutu, our enclave in Southern Nigeria at the mouth of the Niger. After a week at Burutu, I returned to Lokoja, went up the Benue to Bogana, and, thence, made a tour right through the length of the province of Bassa, accompanied, nearly the whole way, by Capt. Byng-Hall the Resident; and, along a large part of it, by Dr. Gush, the medical officer. On emerging from Bassa, at Gbebe opposite Lokoja I proceeded to Baro, the starting point of the Baro-Kano Railway; after inspecting which, I returned to Zungeru, which place was regained on the 16th of November.

Lokoja is the oldest centre of European activity in Northern Nigeria, and its large native town has been, until recently, probably the most insanitary one in the whole Protectorate.

During the last decade, wonderful improvements have been effected in the European quarter, and, were it not for natural landmarks, it would be changed for the better beyond recognition.

Unfortunately, until recently, no such vigorous activity has been displayed in connection with the native town. The confluence of the great rivers Benue and Niger has always attracted a large amount of native trade to the spot, and this was probably the case, long before European influence was felt at all. Early European activity was principally commercial; it was to the interest of commerce to attract as many people as possible to the spot; traders do not interest themselves greatly in sanitation; and they will put up with the most insanitary conditions, rather than hustle the natives whose trade they are naturally courting.

In the early days of Imperial administration, Lokoja was naturally a large military centre; the country was gradually being taken effective possession of; the activities of the meagre Medical Staff were largely absorbed by military expeditions and patrols; the Administration had little time or money to devote to sanitation; and, consequently, vested interests were allowed to grow up in Lokoja native town, which every year, rendered much needed radical sanitary reform more and more difficult.

In many parts of the Protectorate, a native community would voluntarily have deserted so foul a site long ago and rebuilt the town on a clean one: but the population of the Lokoja native town is a mixed one; no particular tribe or race can be said to predominate; and, consequently no united action can be taken under a chief who stands for the whole community. At Lokoja I went into the whole matter of the native town with His Excellency the Governor, the Senior Medical Officer, the Cantonment Magistrate, and the Local Director of Public Works. Early in March, one of the periodical fires—positive blessings, although often attended by sad fatalities—which visit the place destroyed a large part of the town. His Excellency seized this opportunity of dealing drastically with the existing state

of affairs, and steps were taken to remodel the whole town. While travelling with him on the Benue, as well as at Lokoja itself, I enjoyed the privilege of discussing the matter at length with His Excellency himself.

The plan for reform, originally suggested by me, was to the effect that the entire native town should be transferred to a new site across the Mimi, a small stream which enters the Niger below Lokoja. His Excellency was unable to see his way to agree to the carrying out of this plan; but he sanctioned another for the entire remodelling of the town on the existing site, with large extension, in the first instance, up-river, and, later, up the valley which runs inland on the up-river aspect of Pati—the high table-land which rises abruptly behind Lokoja. I am still of opinion that the better plan would have been to have transferred the town across the Mimi; but am quite aware that the political and economic reasons for opposing it are weighty and render it well nigh impossible to be carried out in the immediate future. Nevertheless, I hope to see the day when a new native town shall have been begun across the Mimi; in favour of which, the present town shall gradually be deserted.

The present difficulty at Lokoja demonstrates the embarrassments which are bound to arise, after a station has been established without due regard to arrangement and ample provision for expansion in the best hygienic manner.

The sanctioned plan of improvement was at once proceeded with, and is now being gradually carried out. Operations were instituted, during the year, with a view to obtaining a new supply of drinking water for the European quarter from the face of Pati, about 120 feet below the edge. At that point, beautifully clear water percolates out from the face of the hill and, at the end of August, the yield was over one hundred gallons an hour; but this yield cannot be relied upon as constant, until what time accurate observations shall have been recorded all the year round—such accurate observations are being regularly made and kept on record.

In the course of the journey up and down the Benue, Yola, Niuman, Lau, Ibi, Abinsi, Loko, and Bogana were visited.

At Yola recommendations were made touching the gradual transfer of the station to a better site, and numerous sanitary questions were discussed in association with the Resident and the local Medical Officer. The question of the early transfer of the native town to another site being then under serious consideration, it was decided that it would be neither just nor politic to harass the people in sanitary matters: beyond making them maintain existing arrangements in the best condition possible.

At Niuman, Lau, Loko, and Bogana, nothing could be done at the time; but notes were taken of the existing state and more clamant requirements of those places, and filed up for reference what time action could be taken.

At Ibi, the most important town on the Benue and the headquarters of Muri province, a week was spent: and the condition of the place was gone into carefully, with the Resident and Medical Officer in the first instance; and, afterwards, with the Sariki together with his Alkali and local headmen.

An afternoon and a morning were devoted to Abinsi—There the whole condition of the place was discussed with the Medical and Political Officers, together with the Sariki and his local headmen.

At high river, marshes extend along both banks of the Benue practically all the way from Yola to Lokoja; and, in the dry weather, along many extensive reaches. It would be impossible to render the places bordering the river sanitary, in the perfect sense of the term, except at a cost which was prohibitive. But improvements are being steadily carried on: and it is quite possible to make very material changes for the better, within a reasonable time.

The inspection of Burutu was the second one of the place made by me, during the year. By order of the P. M. O., I had already inspected it in March, when returning from leave at home.

At my second visit, in October, I found some of my recommendations carried out. But the state of affairs was—and is—nearly hopeless. The reason for the second visit was certain complaints, made by the Administration of Southern Nigeria, touching the sanitary condition of the Northern Nigeria portion of the beach.

I found that the Southern Nigerian was nearly, if not quite, as bad as that of the Northern Nigerian portion of the beach. But, of course, "two blacks do not make a white."

The state of affairs is like this:—Burutu is a swampy beach, a few miles above Forcados, at the mouth of the Niger. It faces the river with which it is well nigh awash, at high tide; the surface water is reached at about one foot in most places; and it is backed by mangrove swamp, which encloses it, joining the river immediately above and immediately below it. The beach is resorted to by steamers for the purpose of landing and unloading cargo. The down-river, and larger, portion of the beach, on which are situated the workshops and factories of the Niger Company &c., is under the administration of Southern Nigeria. The up-river and smaller portion—an area of five acres or so—is rented from Southern Nigeria and administered by Northern Nigeria, which uses it as a landing place for cargo to be carried up the Niger on river steamers.

Burutu is a particularly rainy spot and swarms with mosquitoes, largely stegomyia. It is difficult to imagine a place in need of more constant supervision, and greater outlay, for sanitary purposes. Formerly, Northern Nigeria stationed one of its own Medical Officers at Burutu; but, in recent years, he has been recalled, and a retaining fee has been paid to the Southern Nigeria Medical Officer at Forcados in consideration of his visiting the Northern Nigeria portion of Burutu beach daily.

From the sanitary point of view, the entire beach ought to be under the same Administration and Medical authority. During the recent outbreak of Yellow Fever on the West Coast, Burutu and its sanitary condition—furnishing as they do, an ideal environment for the cultivation of the disease—naturally excited considerable misgiving. Burutu is the first British possession along the Coast from the Gambia to the beach of which ordinary ocean steamers are wont to tie up, and where people from ships can step ashore: and it says a great deal for the efficiency of the precautions observed, by all concerned that the disease never gained a footing there. Nevertheless, Burutu must always remain a most vulnerable place; it is doubtful if it can ever be rendered perfectly secure; and all that it is humanly possible to do calls for constant and minute supervision, unceasing effort, and very considerable cost. For these reasons, it is necessary that such dissipation of energy as always attends divided authority be avoided. Further, in my opinion, Burutu beach

calls for the exclusive services of one Medical Officer; and, as his duties call for constant inquisitorial activity, either he ought to be endowed with the powers of a magistrate, or a special magistrate ought to be detailed to be resident there.

The province of Bassa is situated on the left bank of the lower Benue. Roughly, it is bounded by Muri on the East, the Benue on the North, the Niger on the West, and by Southern Nigeria on the South. Physically, Bassa more closely resembles the Southern Nigerian country above the Delta, than does any other province in Northern Nigeria: the indigenous inhabitants are pagans, always suspicious, often timid, and frequently truculent; their civilization, such as it is, is of a most primitive type; and, as is so often the case among pagans their arts—agriculture, cloth-weaving, dyeing. &c.—are on a much higher plane than are their manners and customs.

The country is covered by dense, well nigh impenetrable forest, the native towns, as a rule, are buried in forest fastnesses; tsetse flies abound and render the constant presence of horses and cattle—except the small semi-wild breed of Okpoto cattle—impossible; and the country is infested by chiggers, which cause constant discomfort to many of the inhabitants.

Recently, since our occupation of the country has been resulting in steadily increasing security, Hausas and other Mohammedan immigrants from the north have been settling in the country in increasing numbers and building towns of their own.

At present, the Bassa pagans are not practically approachable, from the sanitary point of view: until recently, each village has been quite independent of the next one, from which it has held aloof and with which it has often been at war; and each individual village has been—and often still is—intensely jealous of its petty, parochial independence. Since the practical extinction of the authority of the Attahs of Idah, no paramount chief has ruled a large district or group of towns: and it is only now, that alien Mohammedan District Headmen are being imported from the North, that anything approaching orderly administration is becoming possible.

Had it not been for the hearty support extended to me by Capt Byng-Hall, the Resident of the Province, who seconded my wishes and activities by every means at his disposal, my tour through Bassa would have been a barren procession. As it was, a distinct beginning was established in the direction of sanitary administration; each district headman is telling off one of his native officials for exclusive service as sanitary inspectors of the town in which he lives; and it will be the duty of these sanitary inspectors to prosecute offenders against sanitation in the Native Courts. At Ankpa and at Agumi, in association with the Resident and Medical Officer, sanitary matters were gone into at length with the respective district headmen, together with their tributary headmen. At Gbebe, I did the same: the Resident was not with me there; but had sent on in advance, to the Anaja, telling him to prepare to receive me and to pay careful attention to what I had to tell him.

At Abajikoro, I advised the Resident touching the laying out of a new Hausa town, and the building of a new rest-camp. In association with the Medical Officer and the Resident, a new site was chosen, at Ankpa, on which to place the permanent headquarters station of the province. Permanent buildings have not yet been sanctioned there, however: as His Excellency is not satisfied that Ankpa is the most suitable spot for the political centre.

After leaving Bassa, I proceeded to Baro, the headquarters and starting point of the Railway. Baro is situated in a horse-shoe or amphitheatre, scooped out of a table-land on the left bank of the Niger. Most of the Europeans live either on the table-land or, at least, up-hill from the horse-shoe; but the members of the trading community and a few railway officials—most of the latter only intermittently –live down in the horse-shoe itself.

A permanent marsh extends along the greater part of the front. According to all the canons of Tropical Hygiene, Baro ought to be a notoriously unhealthy spot; but, as a matter of fact, since its occupation by Europeans, its health record has not been at all a bad one for Northern Nigeria, and, as the Railway Hospitals, both Europeans and native, are situated there, many of the cases of sickness treated are importations.

During the rains, tsetse flies abound, Tachinoides and Palpalis in the horse-shoe and up the cliff, and Morsitans on the table-land behind. The fly-nuisance has been greatly reduced, since the completion, in 1909, of extensive clearing of trees and bush by Dr. Chartres.

During the year, several cases of Trypanosomiasis in natives have been discovered at Baro: and the infected persons have been deported to the neighbourhood of Zaria; to keep them away from tsetse flies. It is impossible to say if all or any of these cases were or were not importations.

This discovery calls urgently for the filling up of the marsh with sand: for it is infested by tsetse flies. The horse-shoe and a larger part of the table-land behind will have to be completely denuded of trees and scrub: which is being done.

Pending the filling up of the marsh, mosquitoes are kept down by constant and extensive oiling: except when the Niger overflows it, during the high river.

Although practically run as a cantonment, Baro, so far as the native population is concerned, is to all intents and purposes a temporary railway camp. What time railway construction shall have been completed, the native population will be evicted from the horse-shoe, and their present grass huts will be burnt to the ground.

3. On the 25th of November, I left Zungeru on another long tour of inspection: and the end of the year found me at Naraguta, in the high lands of Bauchi, less than half way through that tour.

The first objective was Kateri, a Kadara village, in the province of Zaria and on the trade route from Kachia to Abuja. Kateri had been reported to be the centre of an outbreak of Sleeping Sickness: and I went thither accompanied by Dr. Simpson, Entomological Expert for West Africa, by Dr. Scott-Macfie, and by Dr. Porteous who came in the dual capacity of local Medical Officer and as representative of the Resident who could not come.

Kateri is a small village, situated in the midst of a dense Kurumi: and the surrounding country is dotted all over with Kurumis; nearly every one of which conceals a village.

A Kurumi is the Hausa term for a piece of marshy ground, covered by dense forest and scrub, and rendered nearly impenetrable by a network of creepers. In many cases, streams traverse the centres of these

Kurumis. They are an ideal nursery for tsetse flies: and, as a matter of fact, Drs. Simpson and Scott-Macfie found Palpalis in every Kurumi examined.

On investigation, it was evident that the Natives were in the habit of mistaking several different diseases—notably Cerebro—Spinal—Meningitis—for Sleeping Sickness; but there was also every reason to believe that Trypanosomiasis was endemic in the district.

It was further evident that the malady was not a recent importation, as had been reported: for the deputy headman of Kateri, himself a man of over forty, stated that he could remember the malady ever since he was a half-grown boy in his father's time.

When on arrival at Kateri, all its inhabitants, 80 in number, were apparently well—all the sick having died before our arrival. The whole 80 people were examined and blood films were taken from all—34 who shewed enlargement of the cervical glands. In none of the cases was the cervical enlargement well-marked: in fact, it was made out with difficulty in some of the cases; and, in a few of them, was confined to one side. Dr. Scott-Macfie discovered a Trypanosoma in the blood of one of the women; but careful examination failed to discover the parasite in any other case.

At several other villages in the district, blood was taken from people who exhibited slightly enlarged cervical glands; but, in all cases, without any positive result. The blood films were all carefully re-examined at Zungeru; but, again, the parasite was only seen in one—to wit that from the woman at Kateri.

The Kadaras are, as a rule, a bright intelligent race of Pagans: and they are very industrious. They wear very little clothing: a few of the headmen wear short gowns; the men wear skin aprons, or small loin cloths; and the women and children are well nigh stark naked. This scantiness of clothing, combined with their inveterate love of living in kurumis and the wide distribution of Glossina Palpalis in their country, renders them peculiarly vulnerable to the cause of Sleeping Sickness.

They stick to their kurumis: because they fear to be captured as slaves, if they build their huts in the open country. Of course, this danger is practically non-existent now; but it will take a considerable time to re-assure these Pagan communities, who have been concealing themselves from slave raiders for centuries. Unlike their semi-civilized Mahommedan neighbours and persecutors, they are free from Syphilis: and—so far as we know, the Pagans suffer much more from Sleeping Sickness than do the Mahammedans—it will be most interesting to see if later scientific research demonstrate that the Spirochaeta Pallida confers a certain amount of immunity, on the part of its host, towards its kindred protozoon, the Trypanosoma.

On the 7th of December, I left the other members of the party on the Railway, and, after a flying visit to headquarters, marched on to Naraguta.

My reason for proceeding to Naraguta was that I might advise His Excellency, who himself arrived there on the 29th of December, touching the selection of a site for the administrative headquarters of the tinmining country. The country in the neighbourhood of Naraguta is full of good sites: so that the selection of one presents no difficulty whatever. I selected what I considered the best site at Naraguta; His Excellency on going over it, approved the selection; and arrangements were made to proceed forthwith with the erection of temporary native buildings: pending the erection of permament ones later, if Naraguta should eventually prove to be the real centre of the tin area.

While at Naraguta, also, I had the opportunity of advising several members of the mining community touching the laying out of their camps.

4. Throughout the country, the people are gradually being induced to give up planting within the bounds of their compounds, and to keep a clear area, around the inhabited parts of their towns, bare of cultivation and long grass. This principle, however, can only be carried out very gradually among a most conservative people whose habits have been stereotyped for many centuries.

Steady efforts are also being made to secure the the universal principle of surrounding wells with parapets, to prevent their contamination.

The principle, naturally at work already in some parts of the country, of having the market outside of the town-wall is being encouraged: and attempts are being made to induce the headmen to construct caravansaries beside the extra-mural markets; so that the floating population may be kept outside of the towns and, so far as possible, from contact with the local women.

Mosquito-borne, fly-borne and tick-borne diseases, water-borne diseases and leprosy need to have constant war waged against them: as is the case throughout West Africa. But, in the Mahommedan part of Northern Nigeria—by far the most important area of the country—I can say, without the slightest fear of contradiction, that venereal diseases work more havoc than do all the diseases, mentioned above, put together. In the Sudan, venereal diseases have always followed the track of the trader particularly the track of the Arab trader. The European has been familiar with them at home, and, consequently, they do not appeal to his imagination so dramatically as do the so-called tropical diseases; but they are all the more dangerous on this account.

Syphilis and Gonorrhœa account for a larger number of the numerous cases of blindness—generally ascribed by the Natives and non-medical Europeans to Small-pox—; Syphilis causes an enormous amount of abortion, still-birth, and infantile mortality; and it is no exaggeration to say that, outside of the Pagan country, one half of the women of child-bearing age are barren on account of early Gonorrhœa. This state of affairs tends to keep the population stationary, or even decreasing.

Our advent has stopped slave-raiding and internecine wars, which, formerly, were the great hindrancies to increase of population; but it has made practically the entire country safe for the trader, and he carries venereal disease wherever he goes.

So far as we know, the Pagans, in their hitherto isolated communities, are practically free from venereal diseases; but there is very great reason to believe that Sleeping Sickness has always been endemic among some of them. Our advent has brought security to the Pagan, as well as to the Mahommedan trader. The Pagan does not altogether realise this yet; but, when he does, he will emerge from his ancient seclusion and will mingle with other races. The inevitable result of this will be the spread of venereal diseases among the Pagan: and it is quite possible that the foci of the Sleeping Sickness will be multiplied.

Venereal diseases can only be effectively fought by waking up the native rulers to a real sense of their disastrous results: for, when one remembers how little really has been done in this direction in, presumably, monogamous Europe, it is difficult to see how European administrative effort can effect much in this polygamous country. Something has been done already, particularly in Bornu, Kano, and Katsena, in the direction of enlisting the Emirs and their district head men in an active movement against the scourge: and the Medical Officers, in touring their districts, seldom or never miss an opportunity of bringing the question forward.

5. During the year, steps were taken to initiate the establishment of segregation camps for Lepers throughout the country. It will be some time, however, before the many difficulties in the way of carrying out this policy universally and effectively shall have been overcome.

6. Sanitary reforms, in the native towns throughout the country, can and will be gradually brought about at little appreciable cost. The Emirs and headmen have always been tinkering at their towns: and all that is necessary is to gradually direct their normal activities into the proper channels. When one remembers the enormous amount of labour which the people have been continually lavishing upon their ponderous town-walls, until quite recently, it is not difficult to realise the resources available for sanitary purposes. But the process must be a gradual one: with tact and patience, the rulers and their people can be persuaded; but, if driven, they become as stubborn as mules. Nobody can be more politely obstructive than the Mahomedan native of this country.

7. A beginning was made at Zaria, during the year, in the direction of compiling the vital statistics of native towns. The Resident inaugurated a scheme of monthly record of the births and deaths occurring in the Native town, on which he and the Medical Officer are very keen. This is a most interesting experiment—the Emir has taken kindly to it—and if successful, will be gradually extended.

8. In August—by an Order under the Infectious Diseases Proclamation 1908 (section 4)—the provisions of the Infectious Diseases Proclamation were applied to Yellow Fever.

(2) Preventive Measures.

MALARIA During the year, 254 Europeans and 1392 natives—total 1646—were treated for Malarial Fever: of whom, one European and 13 natives died. These figures refer to the number of cases treated, and do not necessarily mean 1646 separate individuals.

Up to date, no accurate method of keeping a correct nominal roll of native patients has been devised.

The nominal roll of enlisted soldiers and police, and of African non-native patients, is fairly accurate: for the former can be identified by their numbers, and most of the latter are known persons who can read and write. But other natives are liable to give one name at one time, another at another time, and to be treated in more than one medical district.

This holds even in the case of prisoners: for a prisoner may serve short sentences, in different gaols, under different names, in the same year.

In Lokoja, Baro, and Zungeru, puddles, which cannot be effectively drained or filled up, are regularly oiled: and the same principle is applied at bush stations, when possible. But, away from the railway, transport is long and costly—*e. g.* to send a tin of kerosene from Zungeru to Sokoto, the most direct way, means a porter carrying it for fourteen days or more at 1/- per day—and oil is often not available.

Water courses are kept clear, as far as the supply of labour available permits: and this is done very thoroughly at the three stations above-mentioned and at most of the stations throughout the country.

It may here be mentioned that piped drains, cemented or bricked water-channels, and long drainage culverts practically do not exist in Northern Nigeria: as the financial resources of the country cannot run to them.

During the year, the Cantonment Magistrate at Lokoja arranged to let out the whole waste land within that Cantonment, in yearly tenancies without rent, to cultivators: on the condition of cropping the entire surface of their holdings with short crops, such as ground-nuts and sweet potatoes, and keeping the adjoining water courses clear. The keeping of Lokoja properly cleared, during the rains, has always been a formidable and costly affair; but, in future, if this scheme work, the cantonment will be kept thoroughly clear without extra expense.

Borrow-pits are either drained or filled up, whenever this is possible; no new borrow-pits are permitted to be made within the confines of stations; and all possible persuasion is being employed to induce the inhabitants of the native towns to fill up their borrow-pits and to go further a field for mud for house-building. Much good work is done in this direction by the Medical Officers, when making tours in their districts.

Most of the wells in stations are kept covered, when this is possible; but up-country, when only rough local timber is available for the purpose and when the white ants attack everything made of wood, it is often impossible to secure efficient covers: in such cases, however, the well is usually further distant than a mosquito's flight from any European residence.

During the last three years, more attention has been paid to the wells than was ever done before; and their condition is being steadily improved, while many objectionable ones have been, or are being, finally closed.

Broken bottles, old tins and other kindred things capable of holding water are, in all stations, daily collected and buried along with other incombustible rubbish.

With the exception of Burutu, I am not aware of a single tub well in Northern Nigeria territory.

Water coolers, and pots and cans for storing water are carefully inspected: and, so far as this can be secured, are emptied daily. Most Europeans keep them securely covered as well. At Baro and Zungeru, since ice-plants were established, the use of the water-cooler by Europeans has greatly diminished.

Many natives, even in towns remote from Europeans, now keep their vessels for the storage of water securely covered by closely-woven mats: the result of anti-mosquito instruction.

There is no piped water in the country except at Baro, where it is limited to pipes from the reservoir at the back of the horse-shoe leading to tanks situated at the base of the rising ground towards the front of its down-river aspect, to a ramp which conveys water to elevated tanks besides the condenser on the hill-top, and to another pipe which feeds the locomotives and the soda-water factory's condenser.

A certain number of iron tanks for collecting rain from roofs are, therefore, an unfortunate necessity: an unfortunate one; because they frequently suddenly cease to be mosquito-proof, and they cannot always be repaired right away.

The use of the mosquito net is universal among the European community, while quite a considerable proportion of native servants, soldiers, police and other native employees, together with a good many African non-natives, also habitually use it.

The daily dose of Quinine is taken by the great majority of Europeans: and some of them give it to their native servants also.

At the end of the year, in Zungeru, Baro and Lokoja taken together, one European house was wholly mosquito protected; 95 European houses had mosquito-rooms; none had been rendered wholly mosquito-proof during the year; and 17 had been rendered partially mosquito-protected during the year. Many of the officials of the Baro-Kano Railway, along the line, have mosquito-rooms, and a considerable number has been issued to officers at bush stations; but I decline to quote any number against them: for the rough methods of transport through the bush often result in those rooms being hopelessly damaged ere they arrive at the stations for which they are intended; when they rest on the mud floor of a mud hut, the white ants often damage them irretrievably, the wooden frames often become warped beyond repair; and to seriously quote a total of mosquito-rooms, a fair proportion of which one knows to be incapable of serving their purpose, is to establish a fool's paradise.

In warning the natives—and the average European as well—against mosquitoes, no attempt is made to describe the different kinds of mosquitoes, their differing habits, and the different effects of their activities: for, in order that no loop-hole may be left, the only sound principle to teach is that all mosquitoes are dangerous; and that, consequently, every method of banishing mosquitoes of any kind must be continually employed.

TRYPANOSOMIASIS. During the year, 8 cases were noted and seven were treated. One of the cases ended fatally: one of the people affected went to his own country on the Coast; one, the woman at Kateri, was left in her own village: the remainder were sent to the neighbourhood of Zaria, to a region free of tsetse flies; two of these escaped en route; and three remained at the end of the year.

Nothing has been done, so far, to deal with the Pagan Kurumis, which are the chief foci of the disease. The question is a big one: from the political, economic, and humane points of view. It is impossible, at present, to get the Pagans to desert their villages; it is a physical impossibility to clear the Kurumis; and the question is still under careful consideration.

Along, and in the neighbourhood of, streams near European stations where tsetse flies are known to exist clearing operations are continually being carried on; and, on the same ground as that mentioned above in the case of mosquitoes, the natives are taught that all flies are dangerous; and they are fully instructed in the methods of putting down flies. The tsetse fly question is a simple one, so far as Europeans are concerned: the mortality among their horses making them admirably keen on the subject.

In July, a circular was sent all over the country from the Secretariat, warning Europeans of the danger of wearing "shorts" on account of the large amount of skin exposed thereby to biting flies.

In Northern Nigeria, we fortunately possess, apart altogether from scientific observation, a very good rough and ready means of determining the distribution of tsetse flies at any given part of the year. The Fulani, over the greater part of the Protectorate, and the Shuwa, in Bornu, possess most of the cattle in the country.

Those are two nomadic pastoral races of Semitic origin: the former, it is believed, being the same people as those who gave the Shepherd Kings to Egypt; the latter, undoubtedly Arabs. For centuries—the Fulani, for many centuries—those people have been in the habit of wandering all over the country in pursuit of pasture for their cattle and other live-stock. Apart altogether from the question of the absolute presence or absence of water, these people avoid certain parts of the country at certain seasons, and shun other regions at all times.

Now many of those areas, thus permanently or intermittently avoided, appear, to the cursory observer, ideal cattle countries; but their long experience has taught those people that, if they do not act as described, their cattle will die. They believe that, in the regions avoided, the water is either permanently or intermittently poisonous. Further, on the march, one is sometimes warned by the people not to camp beside some stream: because the horses will die if they drink its water. Investigation invariably shows that the water itself is not poisonous; but is haunted by tsetse flies. It is the old story of the miasma and mosquito over again.

YELLOW FEVER. In Northern Nigeria, this disease is unknown.

FILARIASIS Among the cases treated, none has been returned as Filariasis. Six natives were treated for Elephantiasis, and 27 Europeans and 208 natives for Pyrexia of uncertain origin. Filariæ were probably responsible for many of these.

Filariasis is very common; but people harbouring filariæ continually come under treatment for diseases unconnected with parasites and are, consequently, not returned as cases of Filariæ. It is quite a common experience to come upon Filariæ, when searching the blood for something else.

In Northern Nigeria, Europeans suffer much less from Filariasis than they do in the Coast Colonies; but it is very doubtful if the natives enjoy a similar relative immunity.

EPIDEMIC DISEASES. So far as is known, Plague and Cholera have never existed in the Protectorate; but this part of the Sudan may not enjoy this exemption much longer, now that the Niger and the railways, and not the desert trade routes, constitute the highways entering it.

CEREBRO SPINAL FEVER Two cases, both fatal, were treated.

SMALL-POX. Small-Pox is endemic; but takes the Epidemic form, somewhere, every year.

Only a small proportion of the cases comes under medical observation. This is not surprising, when one remembers that the Medical Officers, actually in residence, work out at one to an area twice the size of the Crown Colony of Jamaica.

During the year, 43 cases, all of them in natives, were treated: and 3 were fatal.

VACCINATION 3942 successful vaccinations were performed during the year.

It is interesting to note that, of those successful vaccinations, 431 were effected at Kano, 60 at Sokoto, 28 at Kontagora, 68 at Zaria, 16 at Birnin-Kebbi, 84 at Katagum, 471 at Geidam, 146 at Maiduguri, 48 at Nafada, 501 at Bauchi, 233 at Yola, and 187 at Katsina: that is to say, the majority of successful

vaccinations were effected in the dry interior, where, formerly, scarcely any successful vaccinations were performed at all. This is due to the use of powdered lymph. Formerly, when lymph was sent out in tubes, during the transit in mail-bags across country, it became parboiled and inert: and most Medical Officers came to regard the sending of lymph to remote stations as wilful waste.

In some places it is very difficult to get cases to vaccinate: as the people have religious or other prejudices against it. In others, many more vaccinations could easily be done, were it not that, Syphilis being so common, the Medical Officers were afraid to practice arm-to-arm vaccination.

Now that the Pagans are becoming much more approachable than was the case formerly, there will be a great field for arm—to—arm vaccination, before Syphilis—as it undoubtedly will—shall have become rife among them.

Small-Pox is essentially a dry-weather disease: every outbreak going down with the onset of the rains.

DYSENTERY. 22 cases, one of them fatal, were treated among the Europeans, and 546, 43 of them fatal, among natives.

Dysentery is endemic and is observed all through the year; but is generally most common, taking the country as a whole, when the rains begin to flush the dry water-courses.

Like most natives, the people here are not at all particular about the water they drink: and they are, consequently, most vulnerable to water-borne diseases. Were it not for prolonged suckling—from two to three years—water-borne diseases would largely increase the already enormous infantile mortality.

So far as rule of thumb observation can inform us—reliable statistics are, so far, out of the question—the nomadic pastoral people, whose diet consists in great part of sour milk, suffer less from Dysentery than do the other natives; although they drink equally bad water. At most stations, the Europeans are supplied with condensed water for drinking purposes: and, in other places, the boiling of their drinking water is almost invariably a matter of routine.

Most cases of Dysentery in Europeans are traceable to their dishes having been washed with unboiled water, to their fondness for salads, or to their boiled water having been contaminated, or rather recontaminated by the passing of it through a dirty filter-candle.

It seems well nigh impossible to impress upon some Europeans that the rule is "filter and boil," not "boil and filter," and one comes to regard the filter rather as a death-trap than as a safe-guard.

Constant efforts are being made throughout the country to induce the natives to look carefully to their water, to jealously guard their wells from surface contamination, and to boil their drinking water. An increasing number of the natives are taking to the safe-guard of boiling. For example, the Emir of Katsina always sends to the station condenser for his own drinking water, and his entourage, as they express it themselves, habitually "have their water cooked." Of course, all the drinking water for prisoners and for the inmates of Native Hospitals is boiled.

ENTERIC FEVER. One case treated, in a native, was returned as Enteric Fever.

This malady cannot be called a disease of the country. It has occured undoubtedly, among Europeans; but the instances of this have probably been importations, and, when a recorded case ha not been an importation, one is—rightly or wrongly—disposed to regard the diagnosis sceptically.

INFECTIVE ENTERITIS. Two cases were treated, amon natives, with one death.

MUMPS. Six natives were treated.

CHICKEN POX. 23 cases, one of them fatal, wer treated in natives.

COW-POX. 12 natives were treated.

ENDEMIC DISEASES:— SYPHILIS. 580 cases, two of them fata were treated.

GONORRHOEA 1517 cases were treated.

PHAGEDAENA One case was treated.

Of course, these figures are no indication of th wide dissemination of venereal diseases.

LEPROSY. 37 cases, one of them fatal, wer treated.

This disease is found everywhere and th number affected is very large, particularly in th north.

Steps are being taken, as already mentioned, t establish Segregation Camps: and the Medical an Political Officers all over the country are collectin statistics of Lepers; but the evidence, upon whic the statistics, compiled up to date, rest, is so largel only hear-say that they cannot be regarded a reliable.

At first sight, it seems strange that so few leper come under treatment: but leprosy is a very lon drawn out disease; an individual may be infecte for a long time, before the symptoms show them selves; most of the people treated by the Medica Officer are soldiers, police, employees and prisoners soldiers and police before enlistment, and employee as a rule, before engagement, are medically examine and rejected if not sound; and, lepers, who fin themselves the special objects of charity all over th country, have not the same inducement to commi crime as their healthy neighbours.

YAWS. 91 natives were treated. Yaws i observed from time to time, in different parts of th country: and sometimes it appears to assum an Epidemic form; but further observations wil have to be accumulated, before this can be stated a a matter of fact.

TUBERCULOSIS. One case among the European and 9,—3 of them fatal—among the natives wer treated.

Tuberculosis is an exceedingly rare disea among the natives; but it is not at all uncommo among African non-natives from the Coast.

PNEUMONIA. 132 cases, 25 of them fatal, wer treated among the natives.

This disease often appears to assume Epidemi form, when, during the cold weather, the native huddle together in ill-ventilated huts for mutua warmth.

RHEUMATISM 15 Europeans, and 541,—one fatal—native cases were treated.

Rheumatism is a very common disease: an cardiac complications, very often Aortic are fr quently observed.

TETANUS. One fatal native case was treated.

Cases of Tetanus do not often come und observation. The natives, however, are we acquainted with it, and it is probably widel prevalent: but they have a deadly fear of it; the

can hardly be induced to speak of it or even hint at it; and there is good reason to believe that they, almost invariably, carefully conceal it.

CANCER. One native case was treated.

This disease appears to be exceedingly rare among the natives of the country: most of the Medical Officers have never seen a case; and many have not even heard of one.

Helminthic Diseases.

ANKYLOSTOMIASIS. 8 native cases were treated.

BILHARZIA. 1 European and 10 native—one of them fatal.—cases were treated.

TREMATODA. 4 native cases were treated.

CESTODA. 439 native cases were treated.

NEMATODA. 2 European and 28 native—one of them fatal.—cases were treated—

GUINEA WORM. 756 native cases were treated.

Intestinal worms are very common everywhere: and the average native, of whatever race, takes them pretty much as a matter of course; regarding them with the same indifference as the European does a common cold. The native medicine men possess vermifuges of their own, and, when these parasites become too much of a nuisance, the sufferers have recourse to the medicine men. There is evidence to shew that some of these drugs, whatever they be, are most dangerous intestinal irritants.

These worms, undoubtedly, cause a considerable amount of marasmus and death among the children. Half cooked and sun-dried fish are favourite articles of diet all over the country; and those of the population, who are meat eaters, generally eat the meat imperfectly cooked.

Bilharzia is fairly common: especially in the provinces of Yola aud Bornu.

Guinea Worm is common everywhere, and it will be a long time ere much can be done in contending with it. The reason for this is that it is much more prevalent among those who travel than among those who are always sitting down in one place. Now most of the people, particularly the Hausas, outside of the isolated Pagan communities, are born traders; all traders travel; nearly every trader himself carries a load on his head; the distances from water to water are often great; and no known device will stop a tired, thirsty native from drinking at any puddle which he may encounter. Some of these natives, when on their own account, will carry a load weighing anything up to 120 lbs., for long distances, day after day. It is quite common to see natives carrying loads which they can neither put on nor off their heads, without assistance. All their energies are concentrated on the effort of carrying; their higher centres become quite dormant, and their reflexes dull; and they, apparently, become unconscious of their surroundings. Such people will eat or drink almost anything.

At places where Medical Officers are stationed the slaughtering grounds and meat-markets are regularly inspected; diseased animals and bad meat are condemned and destroyed; and, in this way, Europeans and some of the natives are protected; but it only touches the outer fringe of animal and meat inspection: and, with our large area and sparse European population, it will be a long time ere much substantial reform shall have been effected in this direction.

Animals are liable to be slaughtered at any little market or way-side halting-place: provided a sufficient number of people to buy the meat happen to be present.

It is true that animals are killed after the Mohammedan fashion: but the people, as a rule, are not clean feeders; and if the letter of the law can be observed by one drop of blood coming from the cut throat, any moribund animal will be cut up and sold for food.

Pagans do not, of course, observe the Mohammedan law, touching clean and unclean animals; and it is well known that, when horses are evidently dying of Trypanosomiasis, traders buy them up to sell, in the form of meat, to the Pagans.

(3) General Measures.

SEWAGE DISPOSAL. No water system for the disposal of sewage exists. Earth closets and latrine trenches are the methods used for the disposal of excreta at all stations. At Lokoja and Baro, the contents of closet pails and buckets are thrown into the Niger: at all other stations they are trenched. The stools in the latrine trenches are daily covered with earth: only daily; because it has been found, so far, that the great majority of natives will not themselves immediate cover their own dejecta. They are continually warned about this and, when caught transgressing, are proceeded against; but most of the offenders escape.

Lokoja is the only station in the country at which earth-closets are provided for all: including the population of the native town. They do not work well in the native town there: they cannot, in the present disorderly condition of the native town; but this condition of affairs will gradually be amended, as the present process of remodelling proceeds.

At Lokoja, the vessels from the closets are carried to the place of disposal in hand-carts: at all other stations on labourers' heads. At Zungeru, trolleys on the tramway are being substituted for head carriage: and, at Zaria and Kano, bullock carts are being introduced. The system of direct trench latrines is gradually being abolished, in favour of the universal use of earth closets, at all stations where the local resources are sufficient for the purpose.

Sanitary gangs of labourers and a Sanitary Inspector are provided at Lokoja, Baro, and Zungeru respectively. The statistics of individual acts of sanitary activity furnished from these three stations, however, are very nebulous: for none of the Sanitary Inspectors except the one at Lokoja, and he very imperfectly, can read or write. Zungeru, Baro, and Lokoja, are the only towns at which anything in the shape of a local rate—in the European sense of the term—exists. These places being under direct administration, the sanitation is managed by the local authority and the Magistrate levies a rate for the purpose. At all other stations, the sanitation is a domestic affair directed by the Medical Officer: labourers or prisoners are available at some stations for the sanitation of the area within the station boundary; but, at others, the Europeans pay privately for the needs of themselves and their servants, while the soldiers, clerks, employees &c., are made to contribute to the cost of the remainder. All the native towns, excepting those at Zungeru, Baro, and Lokoja, still manage their own Sanitati on their own way; their own methods, being gradually improved in consequence of advice tendered to the native rulers by Medical and Sanitary Officers.

The principle of Government being that of indirect administration *i.e.* government through the political system which was found in existence when the country was taken, the same direct sanitary, or any other, administrative methods cannot be practised in this Protectorate as are in the Coast Colonies.

In most native towns, every compound has one or more tumburis. Tumburis are piriform pits, from four to eighteen feet deep, with the end at the top. At the top, is a small opening, covered, when not in use, by a lid, and, through this opening, the dejecta are passed directly. They are a kind of septic pits, not rendered in brick and cement and surrounded with puddled clay. When the lid is taken off, some fluid, swarming with maggots, is seen ; but they do not smell offensively. They are practically never cleared out.

Of course, the danger in connection with them is the pollution of wells; and there is no doubt that the wells often are polluted by them.

In some of the large towns in the North, notably Kano and Katsina, ordure is removed daily by men, or on the backs of donkeys, and is used to manure the farms in the vicinity.

In the European station at Kano, ordure is regularly removed every morning from the earth closets and stables by the surrounding peasants, who esteem it a favour to get manure for nothing.

Despite what has been written above, promiscuous defecation undoubtedly causes much nuisance on the surface, everywhere, European stations included: and it is almost impossible to stop it altogether in a country where at any given time, many of the people at any given place are semi-nomadic passers through. The same thing took place in London itself, when African troops were taken thither at the Diamond Jubilee of Queen Victoria in 1897: and all the Sanitary and Police authorities in the metropolis were unable to stop it entirely.

Disposal of Refuse:—At Lokoja part of the combustible refuse is disposed of by burning: and the remainder is thrown into the Niger, along with the incombustible. At Baro, Zungeru, and all other stations in the country, combustible rubbish is burnt daily, and the non-combustible rubbish is buried.

In Zungeru station, as distinguished from the native town, a sufficient number of incinerators, at suitable spots, was erected during the year, to dispose of all the combustible rubbish. They have proved a great success.

The natives themselves, in their own towns, are gradually in increasing numbers, adopting our method of burning and burying their refuse.

Water Supply:—The water supply of Lokoja is derived from the Niger and from wells; of Baro from a reservior at the back of the amphitheatre where the water oozing from the face of the plateau is intercepted; and of Zungeru, from the Dago, which flows through the Cantonment. At the stations in the country, the water supply is derived from streams or from water-holes in the dry beds of streams or from wells or from springs: and, at a considerable number of stations, the normal supply is supplemented by roof-water collected in iron tanks. At most stations, the drinking water for Europeans is condensed:. and a sufficient supply is issued to each European, daily.

In many parts of the country, particularly during the dry season the water is of very inferior quality.

In the North, the people are accomplished well-diggers: and wells fifty fathoms in depth are not uncommon.

Drainage:—The soil over most parts of the country is light and porous and percolation is free and rapid. Surface drainage is effected by natural water-courses and by artificial trenches. There are very few stations which do not stand sufficiently high to permit the escape of their surface water.

Clearance of Bush, Undergrowth, etc:—Continuous activity is going on, in this direction, all through the rainy season: and, after the rains have ceased and the bush and undergrowth are sufficiently dry, fire is used to finish the clearing operations.

There are some damp stations, *e.g.* Ankpa in the South and Katagum in the North, when the labour available is never able to maintain an adequate amount of clearance; but reform is gradually effected by the transfer of such stations to better sights or by the granting of more labour.

The natives are being induced to surround their towns with short crops such as sweet potatoes and groundnuts, and to plant their tall crops such as Guineacorn and Millet, further out.

(B.) Measures taken to spread knowledge of Hygiene and Sanitation.

Lectures are not now delivered at the Headquarter stations. At Zungeru, lectures were formerly given to the Clerks and Artizans, *i.e.* to the English speaking African non-natives from the Coast; but steady house to house visitation was found to be much better, and the lectures were, consequently discontinued.

Besides this, the natives do not understand English and house to house visitation is the only thing for them. Lectures in Hausa, which most officers speak, would be of little use. The ordinary low class Hausa-speaking native—the so-called bush Hausa—does not, habitually, use more than four or five hundred words in his vocabulary and to lecture to him on Hygiene, in his own language, would be like reciting passages from Gibbon or Macauley to an audience of Somersetshire Labourers.

The sanitary and Medical Officers, in the course of their tours, deliver addresses to the Emirs and Sarikis and their high officials. This is a very different matter: for many of those individuals are men of keen intellect; they can convey knowledge to their people, when Europeans cannot; and they have the power and, in increasing instances, the will to enforce action arising from that knowledge.

Elementary Hygiene is one of the subjects in the curriculum, at the Government Schools which have been established at Nassarawa, near Kano.

A text-book on the subject, written in such English as will lend itself to easy translation into Hausa, is at present in course of preparation.

It is part of the scheme to have Mallams taught there and to send them back to their own towns to *inter alia*, spread hygienic knowledge there.

Since the completion of 1910, in the latter part of February and the early part of March 1911, the Chief Sanitary Officials of the Emirs of Kano and Katsena respectively accompanied me in a tour through the bush, receiving sanitary object lessons from me at every native town which we passed through. It is the aim of each Sanitary and Medical Officer in the course of his tour, to act as a Missionary of Hygiene.

(C) Recommendations for future Work.

1. To endeavour to secure the enlargement of the central gaols at Zungeru and Lokoja: they being more often than not, seriously over crowded.

2: To try to help on the efforts to give each European a furnished house. Where there are permanent houses, the majority of men have only one appartment; but a large proportion of the men in the bush live in thatched native mud huts, with mud floors and simple holes in the wall by way of doors and windows.

There is a paucity of furniture in most places: and a good many men are supplied with none at all.

Each European ought to have a house, however small, to himself: for no one, who has not lived under the conditions inevitable here, can have any conception of the injury, to health, temper, and professional efficiency, caused by the suppressed irritation which arises from the stabling up together of two or more uncongenial companions.

3. To secure the necessary funds to plant out every station with Dhub grass—short running grass which chokes out every other form of vegetation—and thus settle the clearing problem once for all.

4. To represent the necessity of increasing the number of passenger steamers on the Niger.

The existing steamers are often overcrowded, with Europeans on the upper decks and with Natives on on the lower: while certain African non-natives from the Coast are permitted to travel on the upper decks with the Europeans.

The steamers are over-wrought; they cannot be laid up sufficiently often for adequate repairs and effective cleansing; clouds of mosquitoes are concealed in the dark damp holes and forecastles, by day, and emerge in legions, by night; the mass of natives on the lower decks and the occasional African non-natives on the upper decks are the natural complements of the mosquitoes; and many new-comers to the country often contract their first malarial infections on the journey up river.

If Yellow Fever were to obtain a footing at Burutu, these river steamers in their present condition, would furnish a ready means for its importation to Northern Nigeria.

5. To have the entire beach at Burutu put under the same Sanitary and Administrative authority.

6. To have it finally laid down, by legal enactment, that no European who is not an officer in the service of the Government—whether traders, missionary, or anything else,—no Oriental, and no African non-native shall be permitted to reside or to hold premises within the confines of a native town which is not inside of the boundary of a declared cantonment.

This is a piece of legislation which is absolutely necessary on sanitary grounds.

Non-natives are, of course, under direct administration: while natives are not—except, of course, in cantonments.

A Sanitary or Medical Officer cannot interfere with the affairs of a native town, except through—or by the consent, intimated formally to the native ruler of the town, in each special instance, of—the Resident.

This limitation of the power of the Sanitary or Medical Officer is perfectly just and equitable: for, in conformity with the principle of indirect administration, there can be no communication with a native ruler, except through the Political Officer; and this limitation is really a help—in no way, a hindrance—to sanitary activity. But, were non-natives residing in the town, they would not be the subjects of the Emir; but subjects of the Crown: besides which, if so disposed, they could easily find means of persuading the native ruler to permit them to do things which he would never allow his own subjects to do.

The special permissions indicated might very well call for the immediate intervention of the sanitary or medical officer: with the result that he would either have to ignore things which it was his duty not to ignore or court a break of these harmonious relations with the Political Officers upon which the facility and efficiency of his work depended.

7. To make the rule of the minimum distance, between European habitations and native quarters, which is permissible, apply to non-official as well as the official Europeans. There is nothing *sacrosanct* about an official, which makes his good health more precious than that of a non-official: and non-officials are quite as vulnerable to insanitary surroundings as are officials.

Young Europeans come out to West Africa as clerks and assistants in factories and are liable to be subjected to sanitary conditions under which it is a foregone conclusion that their health will be seriously impaired; but they fear to complain: thinking, rightly or wrongly, that they will be dismissed if they do. The enforcing of this rule would end all this.

8. To have the reports of individual tours of inspection sent home to the Secretary of State.

The distances travelled, the number of places visited, and the matters dealt with in the course of a whole year are apt to result either in rendering an annual Sanitary Report so brief as to be obscure, or so long that it is not likely to court attention.

9. To have the services of the dredger requistioned to fill in, with sand from the river, the dangerous marshes at Baro and Ibi.

(Sgd.) M. CAMERON BLAIR,
Senior Sanitary Officer.

METEOROLOGICAL RETURN FOR THE YEAR 1910.

Zungeru.

MONTH.	Temperature.				Rainfall.		Wind.
	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in inches.	Degree of Humidity.	
January ...	102	57	45	78	—	34	N.E.
February ...	102	62	40	83·7	—	33	N.E.
March ...	107	65	42	86	·83	36	N.E.
April ...	103	70	33	87 7	1·15	61	S.W.
May ...	101	69	32	83·5	6·69	73	S.W.
June ...	95	66	29	80·9	5·54	79	S.W.
July ...	91	67	24	78·7	7·09	82	S.W.
August ...	90	68	22	78	19·27	86	S.W.
September ...	92	67	25	78	10·82	84	S.W.
October ...	96	61	35	81	2·05	77	Various.
November ...	98	57	41	79	—	42	N.E.
December ...	99	60	39	79·7	—	37	N.E.
Year ...	107	57	50	81·2	53·44	60	N.E.&S.W.

Lokoja.

MONTH.	Temperature.				Rainfall.		Wind.
	Shade Maximum.	Shade Minimum.	Range,	Mean.	Amount in inches.	Degree of Humidity.	
January ...	97	60	37	79·5	—	62	N.E.
February ...	99	63	36	85	1·03	59	S.W.
March ...	103	68	35	86·5	·26	61	S.E.
April ...	100	70	30	85	4·45	69	S.E.
May ...	97	69	28	83	5·67	77	S.E.
June ...	92	68	24	80·5	8·07	75	S.E.
July ...	90	70	20	78·5	10·66	80	S.E.
August ...	89	67	22	79	5·98	79	S.E.
September ...	90	70	20	79	5·76	76	S.E.
October ...	98	68	30	81	3·61	77	S.E.
November ...	95	61	34	79·5	—	71	S.E.
December ...	95	58	37	78	—	73	N.E.
Year ...	103	58	45	81·2	45·49	72	S.E.

Baro.

January ...	101	63	38	82·5	—	58	S.W.
February ...	103	70	33	88	—	62	S.W.
March ...	107	72	35	89·6	·15	58	S.W.
April ...	105	70	35	88·3	2·35	61	S.W.
May ...	103	70	33	84·8	5·00	69	S.W.
June ...	99	70	29	83·9	4·69	77	S.W.
July ...	95	68	27	80·1	15·20	83	S.W.
August ...	97	68	29	80·5	13·23	84	S.W.
September ...	97	69	28	82·0	4·15	80	S.W.
October ...	100	70	30	83·5	3·21	75	S.W.
November ...	100	68	32	84·0	—	67	S.W.
December ...	100	64	36	82·5	—	64	S.W.
Year ...	107	63	44	84.2	47·98	70	S.W.

Kano.

January ...	96	46	50	69·6	—	38	N.E.
February ...	100	50	50	73·4	—	37	N.E.
March ...	108	53	55	79·5	—	32	N.E.
April ...	109	60	49	88·0	·02	39	S.W.
May ...	110	71	39	90·0	·98	47	S.W.
June ...	104	68	36	85·4	4·12	54	S.W.
July ...	97	65	32	79·6	8·10	69	S.W.
August ...	92	66	26	78·2	8·97	75	S.W.
September ...	97	66	31	80·7	4·62	68	S.W.
October ...	98	57	41	79·2	—	37	E.
November ...	96	50	46	73·5	—	28	N.E.
December ...	94	51	43	71·4	—	31	N.E.
Year ...	110	46	64	79·0	26·81	46	N.E & S.E

Zaria.

January ...	95	49	46	71	—	42	N.E.
February ...	104	47	57	76·6	—	33	N.E.
March ...	109	54	55	81	—	28	N.E.
April ...	106	68	38	86·6	2·17	54	S.W.
May ..	102	65	37	82·6	3·78	70	S.W.
June ...	96	64	32	79·2	4·95	79	S.W.
July ...	93	64	29	75·9	11·28	86	S.W.
August ...	89	64	25	75·9	17·73	84	S.W.
September ...	93	63	30	77·4	13·08	73	S.W.
October ...	97	52	45	77·5	·81	60	N.E.
November ...	96	47	49	73·9	—	34	N.E.
December ...	98	45	53	71·8	—	41	N.E.
Year ...	109	45	64	77·4	53·80	57	N.E & S.W.

Bauchi.

January ...	94	51	43	74·3	—	33	N.E.
February ...	98	57	41	76·9	—	29	N.E.
March ...	104	62	42	81·6	—	31	N.E.
April ...	104	67	37	86·3	·98	43	N.E.
May ...	102·5	65	37	84·5	3·30	57	S.W.
June ...	97	67	30	82·3	4·73	59	S.W.
July ...	92	65	27	77·6	12·14	70	S.W.
August ...	88	64	24	76.4	8·98	77	S.W.
September ...	93	66	27	77·5	7·58	72	S.W.
October ...	94	63	31	79·5	1·15	43	E.
November ...	93	59	34	77	—	26	N.E.
December ...	93	57	36	74·4	—	26	N.E.
Year ...	104	51	53	79·0	38·86	47	NE.& S.W

Keffi.

January ...	100	54	46	77·5	—	36	N E.
February ...	100	59	41	81·1	—	42	N.E.
March ...	104	60	44	83·6	1·04	42	S.W.
April ...	104	70	34	84·7	1·72	64	S.W.
May ...	101	68	33	82·	5·30	71	S.W.
June ...	100	68	32	80·1	5·28	76	S.W.
July ...	91	68	23	77·4	4·71	82	S.W.
August ...	87	66	21	76·9	13·95	85	S.W.
September ...	93	67	26	78·0	9·30	84	S.W.
October ...	96	66	30	79·9	3·10	76	S.E.
November ...	98	54	44	77·5	—	46	N.E.
December ...	96	52	44	70·9	—	41	N.E.
Year ...	104	52	52	79·1	44·40	62	S.W.

Sokoto.

January ...	95	39	56	71·3	—	37	E.
February ...	97	62	35	78·2	—	38	E.
March ...	107	63	44	84·4	—	36	E.
April ...	108	75	33	91·2	—	42	Various.
May ...	108	67	41	91·0	3·54	53	S.
June ...	103	67	36	88·0	3·91	54	W.
July ...	97	69	28	82·0	6·51	64	S.W.
August ...	92	69	23	80·6	6·03	72	S.W.
September ...	94	70	24	81·6	3·06	67	S.W.
October ...	97	65	32	82·4	·06	41	E.
November ...	96	61	35	78·6	—	25	N.E.
December ...	93	55	38	75·2	—	30	N.E.
Year ...	108	39	69	82·0	23·11	47	E.

METEOROLOGICAL RETURN FOR THE YEAR 1910.

Geidam.

Month	Temperature.				Rainfall.		Wind.
	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in inches.	Degree of Humidity.	
January	100	48	52	71·0	—	37	E. & N.E.
February	100	53	47	74·8	—	33	N.E.
March	114	57	57	79·8	—	29	N.E.
April	113	64	49	89·2	·11	29	E.
May	in sufficient record						
June	112	72	40	92·5	·51	50	W.
July	107	67	40	85.3	5·95	69	W.
August	100	68	32	82·7	7·07	83	W.
September	104	68	36	83·7	3·23	73	W.
October	108	61	47	84·9	—	29	N.E.
November	99	53	46	78·3	—	24	N.E.
December	98	49	49	72·9	—	30	N.E.
Year	114	48	66	81·3	16·87	44	N.E.&W.

Kontagora.

Month	Temperature				Rainfall.		Wind.
	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in inches.	Degree of Humidity.	
January	100	53	47	76·7	—	27	N.E.
February	102	58	44	81·8	—	30	S.E.
March	106	56	50	84·2	1·12	36	S.W.
April	104	67	37	87·6	·44	54	S.W.
May	104	68	36	84·1	4·06	67	S.W.
June	96	66	30	80·2	4·17	74	S.W.
July	93	65	28	76·8	13·29	81	S.W.
August	88	67	21	76·6	16·91	84	S.W.
September	91	67	24	77·2	10·93	78	S.W.
October	96	57	39	79·0	2·09	68	S.W.
November	99	53	46	76·2	—	32	E.
December	97	53	44	76·4	—	28	E.
Year	106	53	53	79·7	53·01	55	S.W.

Ibi.

Month	Temperature.				Rainfall.		Wind.
	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in inches.	Degree of Humidity.	
January	102	57	45	78	—	41	N.E.
February	104	58	46	83	—	39	N.E.
March	107	60	47	86	·02	46	N.E.
April	105	71	34	87	4·39	67	S.W.
May	101	68	33	82	8·83	76	S.W.
June	95	67	28	79	5·56	81	S.W.
July	92	70	22	79·7	5·35	80	S.W.
August	90	68	22	78	11·24	80	S.W.
September	93	69	24	80	7·57	81	S.W.
October	94	69	25	81·5	6·67	78	S.W.
November	96	56	40	79·1	—	63	N.E.
December	99	56	43	79·4	—	51	N.E.
Year	107	56	51	81·0	44·63	65	S.W.

Yola.

Month	Temperature				Rainfall.		Wind.
	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in inches.	Degree of Humidity.	
January	100	61	39	78·7	—	45	N.E.
February	100	64	36	83·5	—	32	N. & N.E
March	107	71	36	87·5	—	24	Various
April	104	70	34	88 4	2·36	56	N.W.
May	101	64	37	84·9	6·97	66	W. & N.W
June	97	69	28	80·9	10·19	77	N.W.
July	93	67	26	78·3	5·21	79	N.W.
August	90	66	24	77·8	8·06	84	N.W.
September	91	69	22	79·4	4·08	77	N.W.
October	96	64	32	82·0	1·80	70	N.W.
November	98	62	36	81·7	—	41	N.
December	97	60	37	79·4	—	40	N.
Year	107	60	47	81·9	38·67	58	N.W.

Ankpa.

Month	Temperature.				Rainfall.		Wind.
	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in inches.	Degree of Humidity.	
January	95	55	40	74·7	1·34	64	N.E.
February	98	56	42	79·4	—	71	E.
March	98	59	39	79·5	1·02	68	W.
April	94	64	30	79·2	5·65	77	W.
May	90	65	25	77	10·04	79	W.
June	88	66	22	76·9	5·64	82	W.
July	86	67	19	74·8	9·38	84	W.
August	83	66	17	74·3	11·42	85	S.W.
September	85	63	22	74·4	5·60	86	S.W.
October	92	65	27	76·1	6·31	86	S.W.
November	92	56	36	75·6	—	79	S.W.
December	95	52	43	74·3	·04	69	S.W.
Year	98	52	46	76·3	56·44	77	W.&S.W.

Nafada.

Month	Temperature				Rainfall.		Wind.
	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in inches.	Degree of Humidity.	
January	101	43	58	70·8	—	42	N.E.
February	103	49	54	75·	—	38	N.E.
March	110	53	57	81·1	—	34	N.E.
April	111	61	50	88·3	·43	48	N.E.
May	108	60	48	88·	2·52	61	W.
June	104	64	40	86·1	4·73	67	W.
July	98	65	33	80·9	8·89	76	W.
August	92	64	28	99·2	13·04	82	S.W.
September	96	68	28	79·5	3·53	84	E.
October	101	54	47	78	·10	59	E.
November	99	49	50	75	—	33	E.
December	95	—	—	—	—	41	E.
Year	111	43	68	80·2	33·24	55	N.E&E.W

Birnin Kebbi

Month	Temperature.				Rainfall.		Wind.
	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in inches.	Degree of Humidity.	
January	93	50	43	71·7	—	45	N.E.
February	99	60	39	78·1	—	39	E.
March	106	63	43	84·0	—	35	N.E.
April	102	72	30	88·7	.22	52	S.W.
May	108	70	38	89·0	2·32	50	S.W.
June	104	68	36	85·9	1·91	58	S.W.
July	93	66	27	79·1	7·78	79	S.W.
August	92	67	25	79·4	4·60	83	S.W.
September	97	67	30	80·2	8·21	76	S.W.
October	99	60	39	81·8	·06	52	N·E.
November	97	52	45	76·5	—	33	N.E.
December	98	53	45	72·7	—	47	N.E.
Year	108	50	58	80·6	25·10	54	N.E. & S. W.

Katagum

Month	Temperature				Rainfall.		Wind.
	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in inches.	Degree of Humidity.	
January	99	49	50	69·6	—	33	E.
February	100	47	53	73·6	—	30	E.
March	110	54	56	80·5	- -	28	E.
April	112	62	50	87·7	·25	33	N.E.
May	108	67	41	89·	1·49	50	S.W.
June	104	72	32	87·2	·95	57	S.W.
July	99	67	32	81·2	5·02	70	S.W.
August	92	65	27	79·2	7·45	76	S.W.
September	94	70	24	81·2	3·05	69	S.W.
October	95	61	34	80·2	—	41	N.E.
November	90	56	34	73·8	—	37	N.E.
December	91	55	36	72·8	--	36	N.E.
Year	112	47	65	79·7	18·21	47	N. E. & S. W.

METEOROLOGICAL RETURN FOR THE YEAR 1910.

Ilorin

Maiduguri.

Month.	Temperature.				Rainfall.		Wind.	Temperature.				Rainfall.		Wind.
	Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in inches.	Degree of Humidity.		Shade Maximum.	Shade Minimum.	Range.	Mean.	Amount in inches	Degree of Humidity.	
January	99	53	46	77·2	—	51	N.	101	48	53	71·2	—	38	N.E.
February	100	60	40	83·4	·03	63	W.	102	47	55	72·7	---	34	E.
March	104	62	42	84·8	1·18	61	W.	114	41	73	77·4	—	30	E.
April	100	65	35	82·5	4·88	69	S.	110	59	61	87·	—	36	N.E.
May	97	67	30	81·7	5·97	69	S.	111	55	56	87·7	2·80	52	S.W.
June	96	58	38	78·7	7·37	80	S.W.	105	65	40	84·9	·65	50	S.W.
July	98	61	37	75·2	6·60	80	S.W.	100	66	34	81·3	6·64	70	S.W.
August	90	62	28	75·4	6·53	82	S.W.	91	62	29	78·6	6·44	79	S.W.
September	89	61	28	75·1	14·71	82	S.W.	96	66	32	80·2	3·00	75	S.W.
October	95	62	33	78·	3·87	85	S.W.	102	59	43	81·3	---	44	N.E.
November		No record						97	53	44	76·4	—	49	N.E.
December		No record						98	49	49	73·1	—	35	E.
Year	104	53	51	79·2	51·14	72	S.W.	114	41	73	79·3	19·53	50	N.E. & S.W.

Table VI.
Nosological Table.

Return of Diseases and Deaths for the year 1910.

Diseases.	Europeans.					Natives.				
	Remained at end of 1909.	Yearly Total. Admissions	Yearly Total. Deaths	Total cases treated.	Remaining at end of 1910.	Remained at end of 1909.	Yearly Total. Admissions	Yearly Total. Deaths	Total cases treated.	Remaining at end of 1910.
Blackwater Fever	...	9	2	9	...	...	1	1	1	...
Beri-beri	...	...	...	...	...	...	26	5	26	7
Cerebrospinal Fever	...	...	...	...	...	...	2	2	2	...
Chicken-Pox	...	...	...	...	...	...	23	1	23	...
Cow-Pox	...	...	...	...	...	1	11	...	12	...
Dysentry	...	22	1	22	1	16	530	43	546	17
Enteric Fever	...	...	...	...	...	...	1	...	1	...
Enteritis Infective	...	...	...	...	...	...	2	1	2	...
Erysipelas	...	...	...	...	...	...	...	...	...	...
Gangrene	...	...	...	...	...	...	4	2	4	...
Gonorrhœa	...	...	...	...	...	38	1479	...	1517	37
Influenza	...	2	...	3	...	2	22	...	24	...
Leprosy	...	...	...	...	...	1	36	1	37	1
Malaria	...	250	1	254	...	13	1379	13	1392	12
Measles	...	...	...	...	...	...	56	...	56	...
Mumps	...	...	...	...	...	...	6	...	6	...
Osteo-Myelitis	...	...	...	...	...	...	4	...	4	1
Phagedoena	...	...	...	...	...	...	1	...	1	...
Pneumonia	...	...	...	...	..	4	128	25	132	4
Pycemia	...	2	...	2	...	...	4	1	4	...
Pyrexia of uncertain Origin	...	26	...	27	...	...	208	2	208	...
Rheumatism	...	14	...	15	2	9	532	1	541	9
Septicæmia	...	...	...	...	...	...	5	2	5	...
Sleeping Sickness	...	...	...	...	...	...	7	1	7	3
Small-Pox	...	...	...	...	...	9	34	3	43	...
Syphilis	...	3	...	3	...	89	491	2	580	54
Tetanus	...	...	...	...	...	...	1	1	1	...
Tuberculosis	...	1	...	1	1	1	8	3	9	1
Whooping Cough	...	...	...	...	...	...	2	...	2	2
Yaws	...	...	...	...	...	1	90	...	91	9
Anæmia	...	53	...	55	...	1	164	8	165	1
Debility	...	10	...	10	...	...	89	2	89	3
Gout	...	2	...	3	...	...	...	...	...	...
Leuchœmia	...	...	...	...	...	...	1	1	1	...
New Growths	...	...	...	...	...	1	2	...	3	...
Lipomia	...	...	...	...	...	...	2	...	2	...
Fibroma	...	...	...	...	...	...	5	...	5	...
Cancer	...	...	...	...	...	...	1	...	1	...
Cyst	...	1	...	1	...	...	8	...	8	...
Effects of Parasites	...	...	...	...	...	...	23	...	23	...
Trematoda	...	...	...	...	...	...	4	...	4	...
Bilharzia	...	1	...	1	...	...	10	1	10	...
Cestoda	...	...	...	...	...	1	438	...	439	2
Nematoda	...	2	...	2	...	...	28	1	28	1
Guinea Worm	...	...	...	...	...	14	752	...	766	8
Ankylostomiasis	...	...	...	...	...	...	8	...	8	...
Jigger	...	6	...	6	...	4	90	...	94	4
Pediculi	...	...	...	...	..	...	1	...	1	...
Scabies	...	...	...	...	...	...	10	...	10	...
Craw-Craw	...	1	...	1	...	15	837	...	852	20
Effects of Injuries	1	38	...	39	1	79	4900	3	4979	100
Burns and Scalds	...	...	...	...	...	2	92	2	94	5
Heat-Stroke	...	4	...	4	...	...	1	1	1	...
Sun-Stroke	...	9	...	9	...	...	4	1	4	...
Shock	...	1	...	1	...	...	2	1	2	...
Gunshot Wounds	...	...	...	...	...	...	27	2	27	3
Arrow Wonnds	...	1	...	1	..	...	15	2	15	...
Sprains	...	15	...	15	...	1	134	...	135	1
Dislocations	...	2	...	2	...	1	4	1	5	...
Fractures	...	6	1	6	...	7	67	6	74	2
Concussion	...	1	...	1	...	...	1	..	1	...
Foreign body in Ear	...	1	...	1	...	...	3	...	3	...
„ „ Eye	...	1	...	1	...	...	7	...	7	...
„ „ Oesophagus	...	1	...	1	...	...	...	...	...	...

Nosological Table (continued.)

Diseases.	Europeans.					Natives.				
	Remained at end of 1909.	Yearly Total. Admissions	Yearly Total. Deaths	Total cases treated	Remaining at end of 1910.	Remained at end of 1909.	Yearly Total. Admissions	Yearly Total. Deaths	Total cases treated.	Remaining at end of 1910.
Effects of Poisons	...	...	...	...	...	...	...	...	...	...
Alcohol	...	...	...	...	...	...	1	...	1	...
Aconite	...	...	1	1	1	...	...	...	...	...
Sasswood	...	...	...	...	...	...	1	...	1	...
Ptomaines	...	...	2	...	2	...	1	...	1	..
Snake bites	...	...	...	...	...	...	21	...	21	...
Insect bites	...	...	3	...	3	...	49	1	49	1
Diseases of the Nervous System	...	...	...	...	...	...	...	..	...	...
Neuritis	...	...	1	1	1	...	11	1	12	1
Meningitis	...	...	...	...	...	...	2	1	2	...
Sclerosis	...	...	...	...	...	...	2	...	2	1
Haemorrhage of brain	...	...	1	...	1	...	...	...	...	...
Softening „ „	...	...	1	1	1	...	...	...	...	...
Hyperaemia „ „	...	...	...	...	...	...	1	1	1	...
Paralysis	...	...	...	...	...	...	7	1	7	...
Torticollis	...	...	...	...	...	...	4	...	4	...
Epilepsy	...	...	...	...	...	...	14	...	14	...
Vertigo	...	...	...	...	...	...	6	...	6	...
Headache	...	...	5	...	5	...	150	...	150	...
Neuralgia	...	...	10	...	10	1	56	...	57	...
Sciatica ...	...	...	4	...	4	...	9	...	9	...
Hysteria	...	...	...	...	...	...	1	...	1	...
Hiccup ...	..	...	...	...	...	...	1	...	1	...
Neurasthenia	...	...	1	1	...	2	...	...	7	...	7	...
Idiocy ...	...	...	...	...	...	...	...	...	1	...	1	...
Melancholia	...	...	...	...	...	...	...	...	2	...	2	...
Mental Stupor	...	...	...	...	1	...	1	...	...	3	...	3	...
Paranoia...	...	...	...	...	...	...	...	...	...	1	...	1	1
Mental Aberration	...	...	...	...	...	...	...	...	...	1	...	1	...
Dementia	...	...	...	...	...	...	..	...	1	1	...	2	...
Insomnia...	...	...	...	...	1	...	1	...	...	...	...	...	...
Diseases of the Eye...	...	...	...	...	...	...	...	...	...	...	...	...	...
Conjunctivitis	...	...	...	...	5	...	5	...	6	643	...	649	1
„ Trachoma	...	...	...	...	...	...	...	...	...	4	...	4	...
Pinguecula	...	...	...	...	...	...	...	...	...	1	...	1	...
Pterygium	...	...	...	...	...	...	...	...	...	4	...	4	...
Keratitis	...	...	...	...	...	...	...	...	...	3	...	3	...
Ulcer of Cornea	...	...	...	...	...	...	...	...	...	18	...	18	...
Scleritis...	...	...	...	...	...	...	...	...	...	...	...	...	...
Iritis	...	...	...	...	...	...	...	...	1	15	...	16	1
Choroiditis	...	...	...	...	...	...	...	...	...	1	...	1	...
Glaucoma	...	...	...	...	...	...	...	...	...	1	...	1	...
Hypopyon	...	...	...	...	...	...	...	...	1	...	...	1	...
Cataract	...	...	...	...	...	...	...	...	...	3	...	3	...
Amblyopia	...	...	...	...	...	...	...	...	...	2	...	2	...
Ametropia	...	...	..	...	...	...	...	...	...	1	...	1	...
Myopia	...	...	...	...	...	...	...	...	...	4	...	4	...
Astigmatism	...	...	...	...	...	...	...	...	...	2	...	2	...
Inflammation of Lacrymal Gland	...	...	...	...	...	...	...	...	...	3	..	3	...
Blepharitis	...	...	...	...	...	...	...	...	..	11	...	11	...
Sty ...	...	...	..	...	1	...	1	...	..	13	...	13	...
Oedema of Eyelid	...	...	...	...	...	...	...	...	...	1	...	1	...
Blepharospasm...	...	..	...	...	...	...	...	...	...	1	...	1	...
Failing Eyesight	...	...	...	1	...	1	...	...	...	...	...	...	...
Diescases of the Ear	...	...	...	...	...	...	...	...	...	...	...	...	...
Inflammation of External Meatus	...	...	5	...	5	...	...	85	...	85	...
Impacked Cerumen	...	...	...	7	...	7	...	...	12	...	12	...
Inflammation of Middle Ear	...	...	3	...	3	...	...	38	...	38	2
Rupture of Tympanum	...	...	...	...	...	...	...	...	1	...	1	...
Inflammation „	...	...	...	...	...	...	...	...	2	...	2	...
Deafness	...	...	...	...	...	...	...	...	1	...	1	...
Diseases of the nose	...	...	...	...	...	...	...	...	...	...	...	...	...
Rhinitis	...	...	...	9	...	9	...	...	38	...	38	...
Epistaxis	...	...	...	...	...	...	...	...	1	...	1	...

Nosological Table (continued.)

Diseases.	Europeans.					Natives.				
	Remained at end of 1909.	Yearly Total. Admissions	Yearly Total. Deaths	Total cases treated	Remaining at end of 1910.	Remained at end of 1909.	Yearly Total. Admissions	Yearly Total. Deaths	Total cases treated.	Remaining at end of 1910.
Diseases of the Circulatory System	...	...	...	...	...	...	...	...	..	...
Pericarditis	...	...	...	...	...	...	1	1	1	...
Endocarditis	...	...	...	...	...	...	4	1	4	...
Valvular disease of heart	...	...	...	...	...	...	28	9	28	1
Dilatation of heart	...	...	...	...	...	...	1	...	1	...
Angina Pectoris	...	...	1	...	1	...	1	...	1	...
Syncope	...	...	1	1	1	...	1	1	1	...
Disordered action of heart	...	...	2	...	2	...	13	1	13	1
Arterial Sclerosis	...	...	3	...	3	...	...	...	...	...
Aneurysm	...	...	...	...	...	...	1	...	1	...
Phlebitis	...	...	...	...	...	...	1	...	1	...
Thrombosis	...	...	...	...	...	...	3	...	3	...
Varix	...	...	...	...	...	...	4	...	4	...
Diseases of the Respiratory System	...	...	...	...	...	...	...	...	...	...
Asthma	...	...	5	...	5	...	...	1	...	1	...
Laryngitis	...	...	7	...	7	...	1	27	...	28	...
Tracheitis	...	...	...	...	...	...	...	2	...	2	...
Bronchitis	...	3	28	...	31	...	35	1064	4	1099	15
Congestion of Lung	...	...	...	...	...	...	...	1	1	1	...
Hœmorrhage „	...	...	...	...	...	...	...	1	...	1	...
Phthisis	...	...	...	...	...	...	...	16	5	16	2
Emphysema	...	...	2	...	2	...	...	2	...	2	...
Pleurisy	...	...	2	...	2	...	...	76	3	76	4
Empyema	...	...	...	...	...	...	...	1	...	1	...
Diseases of Digestive System	...	...	...	...	...	...	...	...	...	...	...
Stomatitis	...	...	1	...	1	...	1	13	...	14	...
Noma	...	...	...	...	...	...	..	1	1	1	...
Dental Caries	...	...	14	...	14	...	1	75	...	76	...
Gum-boil	...	...	4	...	4	...	...	12	...	12	...
Pyorrhœa	...	...	2	...	2	...	...	2	...	2	...
Toothache	...	...	4	...	4	...	1	40	...	41	...
Glossitis	...	...	...	...	...	...	...	1	...	1	...
Sore-throat	...	...	4	...	4	...	...	23	...	23	...
Tonsillitis	...	...	6	...	6	...	...	70	...	70	...
Inflammation of Salivary Glands	...	...	...	...	...	...	...	4	...	4	...
Salivary calculus	...	...	...	...	...	...	...	1	...	1	...
Pharyngitis	...	...	15	...	15	...	...	33	...	33	...
Stricture of Oesophagus	...	...	...	...	...	...	...	1	1	1	...
Gastritis	...	...	45	...	45	1	1	149	...	150	2
Hœmatemesis	...	...	1	...	1	...	...	...	...	...	...
Gastrectasis	...	...	1	...	1	...	...	...	...	...	...
Indigestion	...	...	37	...	37	...	1	273	...	274	1
Vomiting	...	...	...	...	...	...	...	1	...	1	...
Paresis	...	...	...	...	...	...	...	2	...	2	...
Gastralgia	...	...	1	...	1	...	...	14	...	14	...
Enteritis	...	...	21	...	21	...	...	42	3	42	...
Appendicitis	...	...	3	...	3	...	...	5	1	5	...
Colitis	...	...	17	...	18	...	...	29	...	29	...
Intestinal Hœmorrhage	...	...	...	...	...	...	...	1	1	1	...
Intestinal Obstruction	...	...	3	...	3	...	...	..	...	...	...
Hernia	...	...	...	...	...	...	...	22	1	22	...
Diarrhœa	...	...	36	...	36	...	2	893	13	895	6
Constipation	...	...	6	...	6	...	1	1501	...	1502	2
Colic	...	...	11	...	11	...	3	300	...	303	2
Proctitis	...	...	1	...	1	...	...	...	...	...	...
Ischio-rectal abscess	...	...	1	...	1	1	...	3	...	3	...
Fissure of the anus	...	...	1	...	1	...	...	...	...	...	...
Fistula in ano	...	...	...	...	...	...	...	1	...	1	...
Piles	...	...	6	...	6	...	1	30	...	31	...
Prolapse of rectum	...	...	...	...	...	...	...	1	1	1	...
Hepatitis	...	...	4	...	4	...	...	9	2	9	...
Abscess of Liver	...	...	...	...	...	...	...	...	...	...	...
Congestion of Liver	...	1	8	...	9	...	...	6	...	6	...
Jaundice	...	...	2	...	2	...	...	6	...	7	...
Inflammation of Gall bladder	...	...	...	...	...	...	...	1	...	1	...

Nosological Table (continued.)

Diseases.	Europeans.					Natives.				
	Remained at end of 1909.	Yearly Total. Admissions	Yearly Total. Deaths	Total cases treated	Remaining at end of 1910.	Remained at end of 1909.	Yearly Total. Admissions	Yearly Total. Deaths	Total cases treated.	Remaining at end of 1910.
Gall Stones	...	...	...	...	...	...	...	...	...	...
Peritonitis	...	...	...	...	...	...	...	...	...	...
Dropsy	...	...	...	...	...	...	...	...	...	...
Diseases of Lymphatic Systems ...	...	...	...	...	...	...	...	...	...	...
Splenitis	...	I	...	I	...	...	3	...	3	...
Inflm. of Lymphatic glands ...	...	9	...	9	...	3	148	...	151	I
Suppuration of „ „ ...	I	...	...	I	...	...	8	...	8	I
Lymphangitis	...	6	...	6	...	...	46	...	46	...
Lymphangiectasis	...	...	...	...	...	...	I	...	I	...
Elephantiasis	...	...	...	...	...	...	6	...	6	...
Diseases of Genito-Urinary System ...	...	...	...	...	...	...	...	...	...	...
Nephritis	...	I	...	I	...	...	11	4	11	...
Renal calculus	I	I	...	2	...	...	...	...	...	...
Cystitis	...	4	...	4	...	I	9	I	10	...
Rupture of bladder	...	...	...	...	...	...	I	...	I	...
Retention of Urine	...	...	...	...	...	I	I	...	2	...
Hæmaturia	...	3	...	3	...	...	3	...	3	...
Oxaluria	...	I	..	I	...	...	...	...	...	...
Urethritis	...	2	...	2	...	...	...	...	...	...
Stricture of Urethra	...	...	...	...	...	...	12	I	12	...
Urethral Fistula	...	...	...	...	...	...	2	...	2	...
Inflammation of Prostate	...	I	...	I	...	...	...	...	...	...
Hypertrophy of prostrate	...	...	...		...	...	I	...	I	...
Phimosis	...	I	...	I	...	...	9	...	9	...
Paraphimosis	...	...	...	...	...	...	3	...	3	...
Balanitis	...	...	...	...	...	...	I	...	I	...
Oedema of Penis	...	...	...	...	...	...	2	...	2	...
Soft chancre	...	...	...	...	...	I	94	...	95	6
Inflammation of Scrotum	...	I	...	I	...	...	...	...	...	...
Varicocele	...	...	...	...	...	...	3	...	3	...
Hydrocele	...	...	...	...	...	...	77	...	77	...
Orchitis	...	4	...	4	...	I	67	...	68	I
Epididymitis	...	I	...	I	..	...	9	...	9	...
Impotence	...	...	...	...	...	...	2	...	2	...
Endometritis	...	...	...	...	...	I	I	...	2	...
Amenorrhœa	...	...	...	...	...	...	I	...	I	...
Menorrhagia	...	...	...	...	...	...	I	...	I	...
Leucorrhœa	...	...	...	...	...	...	2	...	2	...
Abortion	...	...	...	...	...	...	3	...	3	...
Post Partum Hœmorrhage	...	...	...	...	...	...	I	...	I	...
Mastitis	...	...	...	...	...	...	4	...	4	...
Cracked Nipples	...	...	...	...	...	...	I	...	I	...
Diseases of Organs of Locomotion ...	...	...	...	...	...	...	...	...	...	...
Osteitis	...	...	...	...	...	...	2	...	2	I
Periostitis	...	I	...	I	...	...	12	...	12	I
Necrosis	...	...	...	...	...	...	3	...	3	I
Arthritis	...	...	...	...	...	I	41	...	42	3
Synovitis	...	4	...	4	...	I	142	...	143	I
Stiff joints	...	...	...	...	...	...	3	...	3	...
Curvature of the Spine	...	...	...	...	...	...	I	...	I	...
Myositis	...	...	...	...	...	...	17	...	17	...
Amyotrophy	...	...	...	...	...	...	2	...	2	...
Myalgia	...	12	...	12	...	10	830	...	840	9
Lumbago	...	3	...	3	...	I	63	...	64	...
Ganglion	...	...	...	...	...	...	5	...	5	...
Bursitis	...	2	...	2	...	I	3	...	4	...
Bursal Cyst	...	...	...	...	...	...	I	...	I	...
Talipes Valgus	...	...	...	...	...	...	I	...	I	...
Flat Foot	...	...	...	...	...	...	2	...	2	...
Diseases of Connective Tissue ...	...	..	...	...	...	...	...	...	...	...
Cellulitis	...	10	...	10	I	18	195	...	213	5
Abscess	...	11	...	11	...	14	409	...	423	18
Diseases of the Skin	...	...	...	...	...	...	...	...	...	...
Erythema	...	I	...	I	...	...	3	...	3	...
Urticaria	...	I	...	I	...	...	17	...	17	...

Table VI.
Nosological Table.

Return of Diseases and Deaths for the year 1910.

Diseases.	Europeans.					Natives.				
	Remained at end of 1909.	Yearly Total. Admissions	Yearly Total. Deaths	Total cases treated.	Remaining at end of 1910.	Remained at end of 1909.	Yearly Total. Admissions	Yearly Total. Deaths	Total cases treated.	Remaining at end of 1910.
Eczema	...	4	...	4	...	4	48	...	52	...
Impetigo	...	3	...	3	...	1	13	...	14	...
Boil	1	20	...	21	...	1	124	...	125	4
Carbuncle	1	2	...	3	...	1	...	...	1	...
Gangrene	...	1	...	1	...	...	...	...	...	...
Herpes	...	2	...	2	...	...	25	...	25	...
Pemphigus	...	...	...	...	...	...	4	...	4	1
Dermatitis	...	18	...	18	...	...	8	...	8	...
Psoriasis	...	3	...	3	...	2	4	...	6	...
Pityriasis	...	...	...	...	...	...	1	...	1	...
Keratosis	...	...	...	...	...	...	2	...	2	...
Wart	...	...	...	...	...	...	1	...	1	...
Corn	...	...	...	...	...	...	4	...	4	...
Leucodermia	...	...	...	...	...	...	1	...	1	...
Veldt sore	...	1	...	1	...	...	...	...	...	...
Ring worm	...	7	...	7	1	2	48	...	50	1
Tinea Cruris	...	3	...	3	...	...	3	...	3	...
„ Versicolor	...	...	...	...	...	...	1	...	1	...
Seborrhœa	...	...	...	...	...	...	1	...	1	...
Acne	...	3	...	3	...	...	...	...	...	...
Prickly heat	...	7	...	7	...	...	...	...	...	...
Folliculitis	...	...	...	...	...	...	2	...	2	...
Sycosis	...	1	...	1	...	...	...	..	...	...
Onychia	...	...	...	...	...	...	5	...	5	...
Whitlow	...	3	...	3	1	...	25	...	25	...
Ainhum	...	...	...	...	...	...	6	...	6	...
Ulceration	..	6	...	6	1	107	1698	...	1805	84
Senile decay	...	...	...	...	...	...	2	2	2	...
Drowning	...	...	1	...	...	...	1	1	1	...
Amputations	...	...	...	...	...	...	4	...	4	...
Circumcisions	...	...	...	...	...	...	10	...	10	...
Uncertified	...	...	3	...	...	...	...	...	...	...
TOTAL ...	21	1,018	13	1,039	12	542	23,228	208	*23,770	489

* Not including 4,951 cases treated at the beach dispensary Baro during August and September.

SOME NOTES ON LEPROSY IN SOKOTO PROVINCE.

Native beliefs. Heredity. The natives do not profess to know the cause of leprosy but believe that it exists in the blood at birth: it may appear years afterwards as the result of improper food &c. This suggests an appreciation of the influence of heredity. Puberty is supposed to be the period when the symptoms are likely to appear, but while some declare that it may be latent as long as 60 to 70 years others deny this.

In this district all are agreed that the children of lepers are immune but that those of the following generation frequently show the disease usually within 6 to 9 years or at puberty. In illustration it is stated that if a child of healthy parents is carried on the back of a leper slave girl, the child will become a leper. (It is added that the disease will appear in the parts in contact with the girl's body.) If however the child is the offspring of leper parents he will not become a leper. The reason why the succeeding generation acquires leprosy is supposed to be that an alien strain of blood is necessary in order to bring leprosy hereditarily acquired to the surface. Again a person born of leper parents does not fear to handle leprous sores &c., believing himself immune, though his children are susceptible.

This curious belief in *atavism* (which is of course common in many countries in regard to leprosy) is not universal in Hausa-land. From Kano Eastward the sons of lepers, however well dressed and healthy, are generally saluted by their acquaintances when they meet and given a nominal alms of 2 or 3 cowries in the superstitious hope that the fates, (or hereditary taint), may pass them over.

The native belief in heredity is also shown by the fact that in Eastern Hausa provinces and in Adamawa and Bornu the better classes do not allow marriage with the son or daughter of lepers, or of the blind, or of the butchers (either owing to their trade in blood or from some early Mohamedan tradition).

Contagion. In regard to contagion native belief is much less definite. It is obvious that for the most part little heed is paid to the presence of lepers in markets &c. where they freely mingle with the people and may even be seen selling articles of food.

The question whether a man who marries a leper woman (or *vice versa*) becomes in time a leper is disputed and has given rise here to heated debate, some denying the occurrence while others point to actual cases. Many intelligent natives in all the Hausa provinces believe that leprosy may be acquired by intercourse with a leper woman, a belief which has much acceptance in the Pacific, and is widely held in perhaps all countries where leprosy is endemic. Infection by intimate contact, such as that mentioned of a child carried on the back of a leper is given due credence.

It is quite certain that the idea of isolation in some degree not only commends itself to the native minds, but is in many parts of Hausa-land and other parts of West Africa carried out by themselves. In Kano there is a tendency to segregate lepers in the neighbourhood of the hill Dala within the town. East of Kano it is not uncommon to compel lepers with their families to remove to the bush and form farms for themselves. Cases in the early stage of erythematous patches &c. though often recognised as lepers are not thus segregated.

The Yorubas believe mainly in direct contagion from person to person but admit other causes such as wrongly administered medicines &c. Their practice is to drive lepers to the bush, and in former days young lepers were even killed. Now however it is common to isolate lepers in the bush and even to treat them and admit back to the community those who appear to be cured.

Food and other theories. There is no evidence that any native traces leprosy specially to dried or preserved fish. There exists however a wide belief in the connection between food and the disease *e. g.* (1) bad, dirty, or contaminated food in general, (2) unclean or contaminated utensils, and (3) particular articles of food. In regard to (1) and (2) no definite ideas can be mentioned. There is a fairly widespread belief amongst Hausas however that the "*Kulba*" lizard (or skink—*Mabuia Perrottetii*—a smooth red bodied species) is capable of causing leprosy, according to some by its bite, and according to others by accidentally fouling food or cooking utensils, water-jars etc. With this may be compared the belief of some people in Eastern Hausa that if a "*Kulba*" lizard is eaten accidentally by a fed bull the latter grows inordinately fat but the flesh and tripe of that animal will be avoided by those who know the circumstances, in the belief that they cause leprosy.

The *Torunkawa* (the local Fulani people of the higher ranks in Sokoto town and district) have some quite peculiar beliefs in regard to the relation of food to leprosy. Persons with an hereditary taint of leprosy or those already showing early symptoms are believed to have the disease brought out or aggravated by certain well defined articles of food. These are:—

1. "*Kulumi*," a black species of barbel.
2. "*Kembeshi*," also a fish of the barbel tribe; (this species is not found in the waters near Sokoto town but is known in places not many miles distant).
3. "*Kififia*," the mud turtle.
4. The *goat*—whether milk or flesh, (this suspicion attaches by no means solely to the male goat).
5. The fish called "*Robai*." This is a narrow fish of lizard-like shape and smooth skin is supposed to be a transformed "*Kulba*." It is avoided as food by those who know it.

Leprosy is common amongst the *Torunkawa* and the better informed amongst them do not eat those varieties of fish on account of their supposed connection with leprosy. The more careful amongst them also avoid dried fish for the reason that one cannot be certain that it is not one of the suspected species. Any well disposed person who sees the "robai" exposed for sale or recognised it in the dried form will seize it and throw it away. Many of the *Torunkawa* however eat dried fish freely and fresh fish of other species.

The other Fulani tribe of the district, the *Sulubawa* eat fish freely as well as the other articles of food prescribed by the Torunkawa and are said to suffer less from leprosy. This requires verification.

The *Torunkawa* as a rule do not buy meat exposed for sale in the market unless they are sure that it is not mixed with goat's flesh. For this reason the tail of a sheep is sometimes seen laid beside the meat on the market stall to indicate its origin, but this is a form of fraud which is well recognised in Hausa markets.

Similarly in regard to milk the *Torunkawa* as a rule avoid that sold in the market in case it is adulterated with goat's milk, but use both milk and flesh of the cow and flesh of the sheep in their own homes. Many of these people even extend the *taboo* to chicken and guinea-fowl except when raised at home.

The *Berroro* Fulani in the bush live chiefly on the the products of the cow and are said to have little leprosy and they probably rarely eat fish except that which they catch themselves in bush streams, but dried fish when opportunity offers at a market.

How fatuous some of the native beliefs are is suggested by the fact that in Kordofan goat's milk as the sole diet for forty days is a recognized method of treating leprosy.

According to native ideas it is apparent that heredity is the really important factor, and articles of food and other factors are considered to operate chiefly on those who are believed to have an hereditary taint. This qualification extends in some degree even to the possibility of direct contagion. The habit of the Torunkawa of this province in regard to fish eating might be construed either for or against the fish theory, but it will be observed that *Sokoto District* shows (*vide* statistical table) with one exception the lowest proportion of lepers in the *division.* It would appear that even if the native mind incriminates fish, it is fresh fish and not the half-cured article which is suspected. The native method of preserving fish is not as a rule by salting but by smoking by means of fire under a low wicker platform on which the fish is laid. Fish thus imperfectly preserved is generally, but not always, eaten without further cooking. All varieties of fish are at times thus treated from the small species resembling white-bait to the giant perch and even crocodile flesh. Along the Benue this industry is one of the commonest sights during the dry seasons and it will be interesting to compare the incidence of leprosy in the riverine provinces with that found in these further north.

NATIVE TERMS. There is little doubt that the natives are able to recognize the symptoms of leprosy at an early stage, though a natural fear prevents the patient or his people declaring the fact. Quite recently I have had to pronounce a definite opinion on a case which showed no other symptom than two small anæsthetic patches of erythema, yet the person had for some time been suspected by his neighbours to be a leper.

Dafe is the term applied to the early macular stage of erythematous and anæsthetic patches when sufficiently well defined to attract attention.

The term *Zafi* alone in vaguely used of persons suspected often correctly of being lepers in an early stage. It corresponds (when used of this disease) more or less with the period of prodronal symptoms with general weakness, feverish attacks, obvious ill health, pains or peculiar sensation etc., in the skin, and the less defined types of skin eruption.

Bakin Zafi ("black or perhaps suppressed inflammation") is the special term for obvious *nodular* or *tubercular* leprosy, while *Kuturta* is the general Hausa name for the disease, and is the only term used for the classical types of deformity which result from *nerve leprosy.*

NATIVE TREATMENT In regard to native treatment of leprosy nothing of any value or even in the least suggestive of suitability can be mentioned. Many different plants could be referred to which are in use in different localities and are practically always combined with faith in written charms obtained from a mallam, or are compounded as a brew with the washing of portions of the Koran written on a Mallam's tablet. The *Torunkawa* are again peculiar in having a preventive treatment of their own, viz: a cold infusion of the leaves of the *Sabara* (a common shrub *Combretum sp*) taken daily as an evening draught. This is said to be an indispensable preventive used by all the tribe and commenced at birth. The pratice of blood-letting used for leprosy in some other parts of the Soudan, and in this country for various diseases, is not used here for leprosy from observation of the fact that wounds in a leper do not readily heal. I attach a table of the population of lepers in the various districts of *Sokoto Division* as such figures may some day be of use for comparision with those of other provinces. It will be seen that no less than 16 districts out of 46 show a proportion of over 100 per 10,000 of population, and of these 3 districts have over 200 per 10,000, (*Kwarre*, 236.4 *Dinawa*, 224 and *Zurmi* 203) whereas in only two districts does the figure fall below 20 per 10,000 (Gummi 17.6 and Sokoto town and district 17.7)

The populations are those of the assessment papers of March 1910. The number of lepers is probably under estimated, but the same may perhaps apply to the enumeration of population for purposes of assessment. No comparison of the 3 *Divisions* of the province (*Sokoto, Gando, and Argungu,*) in regard to tribal and social differences is possible at present. The number of lepers per 10,000 of population is

in whole *Province*	52.
in *Sokoto Division*	53.2
in *Gando Division*	49.2
in *Argungu Division*	37.6

The proportion of female to male lepers over the whole province is about 2 to 3. In India this figure is 2 females to 5 males, and in Japan 2 to 4.6. In 3 districts the female lepers exceeding the males. Sokoto town contains 117 lepers *Jega* 64, *Gando* 36, *Illo* 30, and *Birnin Kebbi* 21.

The total number of lepers in the province is so large (nearly 6,600) that it is obviously beyond the powers of the native administration to deal with them satisfactorily, and short of such large measures of effective segregation and treatment as can be afforded by Government institutions it is doubtful whether much is to be expected.

In paragraph 10 of the attached memo. I have indicated what appears to me to be the irreducible minimum of local measures to be put into practice.

(Sgd.) JOHN M. DALZIEL, M.D., B. Sc.
M. O., Sokoto.

Sokoto,

Leprosy in Sokoto Province.

SEPTEMBER 1910.

Name of District,	Population of District.	Male Lepers.	Female Lepers	Total Lepers.	Lepers per 10,000.	Prop. of Female to 100 Male Lepers.	Percentage.	
							Female	Male.
1.—Sokoto Division.								
Anka	12,088	31	24	55	45·5	77·4	44	56
Badardwa	25,955	94	82	176	67·8	87·2	47	53
Bazai	22,980	28	26	54	23·5	92·8	48	52
Bodinga	8,350	37	19	56	67·0	51·3	34	66
Binji	5,860	66	33	99	168·9	50·0	33	67
Silame (Birnin Peria) ...	9,846	63	41	104	105·6	65·0	39	61
Bakura	18,820	58	19	77	40·9	32·7	25	75
Bukwuim	9,778	46	33	79	80·8	71·7	42	58
Bungudu	29,262	134	51	185	63·2	38·0	28	72
Denge	10,536	30	16	46	43·6	53·3	35	65
Dinawa	1,470	13	20	33	224·0	154·0	61	39
Dingyadi	5,010	61	37	98	195·6	60·6	38	62
Dogondaji	10,440	20	13	33	31·6	65·0	39	61
Dundaye	2,260	11	8	19	84·0	72·7	42	58
Gandi	20,151	43	17	60	29·7	39·5	28	72
Gadabawa	40,200	80	13	93	23·1	16·2	14	86
Goronyo	13,400	84	73	157	117·2	86·9	46	54
Gusau	21,792	105	72	177	81·2	68·6	41	59
Gummi	26,060	26	20	46	17·6	76·9	43	57
Maru	15,020	98	72	170	113·2	73·5	42	58
Moriki	14,797	40	72	112	75·7	180·0	64	36
Raba	14,400	122	67	189	131·2	54·9	35	65
Sabon Birni	13,701	22	11	33	24·1	50·0	33	67
Sanyinnan Daji	2,064	20	15	55	169·5	75·0	43	57
Salome	4,100	24	11	35	85·4	45·8	31	69
Sifawa	4,240	40	20	60	141·5	50·0	33	67
Tambawel	29,270	63	42	105	35·8	66·6	40	60
Talata Mafare	25,285	133	99	232	91·7	74·0	43	57
Tureta	3,582	11	9	20	55·8	81·8	45	55
Isa	13,820	100	21	121	87·5	21·0	17	83
Jabo...	4,830	12	8	20	41·4	66·6	40	60
Kawra Namoda	24,711	262	164	426	172·4	63 0	38	62
Kebbe	9,680	45	23	68	70·2	51·1	34	66
Kelgori	2,800	10	7	17	60·7	70'0	41	59
Kwargaba	3,200	11	8	19	59·4	72·7	42	58
Kwarre	6,600	84	72	156	236·4	85·7	46	54
Kwiambana	2,580	16	8	24	93·0	50·0	33	67
Kwoterokoshi	11,018	78	76	154	139·7	98·7	49	51
Maradu	37,405	146	128	274	73·2	88·0	47	53
Shumi	12,000	82	52	134	111·6	63·4	39	61
Tsafi	—	35	46	81	—	131·0	57	43
Sokoto District. Sokoto Town Sarinkin Muslin Villages Ubandomas ,, Sarikin Zamparis ,, Galadiman Gari ,, Alkalin Gari ,, Magajin Gari ,, Magajin Rafi ,, Waziris ,,	401,010	430	283	713	17·7	65·8	40	60
Carried forward	....	...	...	...	...	...	...	...

Leprosy in Sokoto Province.—COntinued.

Name of District.	Population of District.	Male Lepers.	Female Lepers.	Total Lepers	Lepers per 10,000	Prop. of Female to 100 Male Lepers.	Per centage. Female	Male.
Brought forwad ...	...	...	...	...	...	...	...	...
Walabi	3,000	21	14	35	116·6	66·6	40	60
Wamako	9,518	51	25	76	79·8	49·0	33	67
Yabo	31,650	81	45	126	39·8	55·5	36	64
Wurno	7,520	79	56	135	179·5	70·9	41	59
Zurmi	8,080	80	84	164	203·0	105·0	51	49
Total ...	1,010,139	3,226	2,155	5,381	53·2	67·0	40	60
2.—Gando Division. ...	211,381	703	338	1,041	49·2	48·0	32	68
3.—Argungu Division. ...	46,000	120	53	173	37·6	44·0	31	69
Total Province ...	1,267,520	4,049	2,546	6,595	52·0	62·8	39	61

COMMENTS ON REPORT ON LEPROSY IN SOKOTO PROVINCE SEPTEMBER 1910.

I have gone carefully over the reports on the prevalence of leprosy in the Province and append herewith some notes which suggest themselves.

1. The figures stated are I consider very alarming even if they should prove to be over-estimated, which is improbable since doubtless many of the less obviously affected have not been included.

Except in the case of *Argungu Division* the ratio to population is not stated. The forthcoming census may reveal the population to be higher than at present believed, in which case the percentage of lepers will be proportionately less, but for comparison with known figures in some other countries I have in the meantime taken the populations of several districts in *Sokoto Division* as shewn in the latest assessment papers (March 31st, 1910) and have calculated the number of lepers per 10,000, of total population, which is the usual method of stating leprosy statistics.

In *Argungu Division* this figure is 37·6 per 10,000, which is itself an exceedingly large number, but is far exceeded in several districts of Sokoto Division where the figures range from 17·6 per 10.000 in *Gummi District* and 17·7 per 10,000 in *Sokoto District* (including the town and 8 other areas), to 236 per 10,000 in *Kwarre District.*

The average for the whole of *Sokoto Division* is 53.2 per 10,000, and I doubt if this figure is exceeded in any part of Africa in a similar area.

India, 7 per 10,000, in 1901. (1)
Japan, 5 „ „ in 1906. (2)

but probably much greater figures in some of the Pacific Islands.

(1) Imp. Gazetteer of India 1907, Census 1901.
(2) Shiga. Transactions of the Bombay Medical Congress, 1909.

2. In view of the very large total (6595) for the province one can hardly expect any measures which depend for success on native executive and finances to be of serious value in preventing the spread of leprosy.

Whatever theory is held as to the mode of spread—contagion, insect carrier, or contamination of food—the leper himself must be regarded as the chief danger and should therefore be isolated. A wholesale system of isolation is obviously impracticable at first, but some simple measures of segregation and comparative isolation of a considerable number of the worst cases is feasible to begin with, and the system may well be gradually extended to other areas and in time made to include other cases than the helplessly deformed. It is impossible to handle the question practically without some degree of hardship to some individuals, and even the simplest measure of isolation will not be willingly accepted by all those subjected to it.

It is also needless to say that disinfection of clothes, discharges etc of ulcerative cases cannot be effectually carried out in connection with any primitive measure of isolation under native supervision.

3. As the chiefs appear willing to give effect to at least a modified isolation, there should be no great difficulty in forming a leper settlement outside each town and even in the neighbourhood of any group of of villages where there are several lepers. Even if not at present acted upon in the province by the natives themselves this cannot be altogether alien to the popular ideas, and is done as a native measure in some form or other in some other parts of Northern Nigeria.

The sick only should be lodged in such settlements, every healthy person being absolutely excluded from sleeping or living there.

4. At present it may be expedient to allow the crippled to *beg outside* the towns but no leper should be permitted to sell food or clothing etc. (There is I believe at present more than one leper making a living by selling Kola nuts in Sokoto town).

5. The idea of forming leper farms to be worked by healthy persons on their behalf is not to be commended at least to begin with as it would probably cause hostility at the commencement. At

the same time it should not be forgotten when the time comes to extend the system of segregation to include other than the mutilated and helpless cases, that there is always a considerable proportion of pronounced and sometimes actually disfigured lepers who are not mutilated and who are capable of manual work. These require isolation from a preventive point of view quite as much as the others, and with their help a leper farm might in some instances be profitably worked for the partial support of the Colony.

6. The suggestion to form a few large leper centres for the whole province is not feasible at the commencement, but might well be aimed at after a modified local segregation has been shown to be a benefit, and has in a measure educated native opinion.

7. The suggestion of the *Serikin Muslimin* that leper *Sarakuna* should not be interferred with for the reasons stated is not unreasonable, but a little tactfully offered advice or persuasion in regard to modified isolation within their own menage, cleanliness of person and houses etc. is necessary, and would probably not alienate their sympathies from the proposed measures.

In other cases where it is inexpedient or impossible without undue severity to remove a leper from his family, a *modified* isolation should be carried out at home, bed, clothing, food utensils and a hut to sleep in being so for as possible devoted to his sole use. This involves *supervision* which in the early stages of any preventive scheme is likely to prove one of the chief obstacles.

8. In the present condition of native social life it should not be difficult to enforce an order against the marriage of a leper. The fact that lepers become early sterile though it prevents their continuing to propagate children who will be born into infected surroundings does not render them less a source of danger to those near them.

9. In practice the chief obstacles to any effective measures of isolation will probably be found to be:—

(1) *Reliable Supervision* (*vide* para. 7 above), as no European Official, Political or Medical, can undertake the supervision of lepers throughout the Province. This must be left to the headmen of each locality.

(2) *The question of families.* This is by far the most serious difficulty at the commencement of any system.

(*a.*) It is an axiom that healthy children should be separated from a leper parent, and the native belief in atavism, though widely held must be disregarded. In application this measure cannot often be carried out without hardship. It is quite obvious that healthy children should on no account be placed on the leper settlement, and if it is impossible without undue severity to induce an infective parent to reside in the settlement, a modified isolation at home should be enforced. These are the cases where the difficulties of supervision are most apparent.

(*b.*) In cases where it is imperative that children should be separated from a parent (*e.g.* when the latter is already reduced by deformity to begging, or is an obviously infective case of ulcerating tubercular leprosy) provision will have to be made for the former. If the native administration is able and willing to allow a sum for maintenance of the segregated cases it is not too much to ask of Government to allow a grant for the support and care of families separated from parents.

10. To summarise the measures which in some form may be found to be practicable in this Province:—

(1.) *Segregation* of the worst cases in settlements outside towns, *modified isolation* of particular cases.

(2.) Leper vagrants not permitted to roam over the country or enter the towns.

(3.) Lepers not permitted to take part in certain trades involving the handling of food and clothing.

(4.) Separation of healthy children from affected parents, and their maintenance if necessary at public expense.

These measures have as their object the prevention of the spread of leprosy from person to person which probably occurs under the present unrestrained intercourse of sick and healthy. They will also be a useful first step towards the general sanitary improvement of the conditions under which the natives live and their education in habits of cleanliness both of person and environment.

(Signed.) J. M. DALZIEL,
M. O.

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